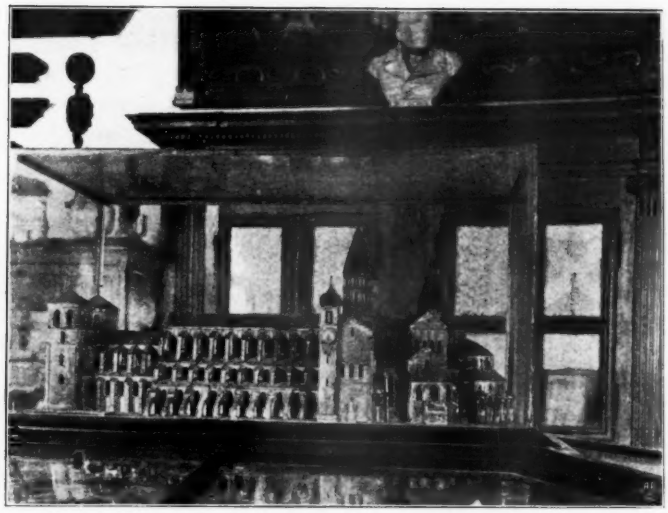

Fig. 1.—Model of Abbey Church in glass case, Cluny Museum.

CLASSIFICATION OF ROMANESQUE ARCHITECTURE.

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INTRODUCTION.

To one whose horizon has hitherto been bounded by the Romanesque of Ely and Gloucester, Durham and Winchester, his first impressions of Continental Romanesque are, to say the least, somewhat bewildering. In Normandy, indeed, he feels himself on familiar ground. In the Abbaye-aux-hommes, the Abbaye-aux-dames, at Jumièges, and St. George de Boscherville, there is nothing in the planning, the construction, the ornamentation, that is strikingly dissimilar to the eleventh- and twelfth-century work of his own country. But step outside of Normandy, and all is changed. Churches vast in scale, of monumental solidity and stability, overwhelmingly solemn and impressive, confront him; but churches of shape and form hitherto undreamt of, differing from anything that he has ever seen, differing quite as completely from one another. Durham has not prepared him for Notre-Dame, Poitiers; Notre-Dame, Poitiers, is even more unlike Saint-Hilaire, Poitiers, than it is unlike Durham. Neither Notre-Dame nor Saint-Hilaire, Poitiers, prepares him for Loches; nor Loches for Issoire; nor Issoire for Tournus; nor Tournus for Le Puy; nor Le Puy for Autun; nor Autun for Saint-Front or Angoulême. It seems a perfect welter of styles; a maze without a plan. The English student begins to see that he has been living, after all, in only a little corner—the poorest, barest corner—of the great Romanesque world: he realises, perhaps for the first time, that there is not one, but many Romanesques, and that his own little variant of Romanesque was, in some respects, the least important of them all. That there is, that there can be, any unity in all the variants is at first and for long inconceivable. The first lesson—and it is a good one to have learnt—is of the marvellous diversity of Romanesque; that there is a unity in this diversity is a lesson to be postponed till later.

I have tried to depict above, briefly, some of the difficulties which beset the student on his first introduction to that great style which preceded Gothic and was based on Roman work. They are difficulties which I felt profoundly myself on my first visits to the Romanesque churches of the Continent. It is to make things a little easier for beginners like myself that I have attempted in this Paper to deal shortly with the thorny question of the Classification of the Romanesque Styles. To make an exhaustive and scientific synthesis covering the whole field would require a volume.

CLASSIFICATIONS.

At the beginning of one's first studies of Romanesque one naturally asks whether classifications of its variants do not already exist. They do exist. One of the chief pioneers of mediæval ecclesiology, De Caumont, long ago, in his *Architecture religieuse*,* grouped the Romanesque buildings of France geographically. Unfortunately, he selected ornament as his chief criterion of style; and nothing is more unreliable or more misleading than ornament. For his disregard of such essentials as construction and vaulting his whole system was attacked, and to a large extent discredited, by Quicherat; his critique will be found in the second volume of his collected works. For judgments based on the carving of a capital,† or the profile of a moulding, Quicherat substitutes a system based on the vaulting of the nave—an enormous improvement. The mistake is to erect this into the position of leading and almost sole criterion. A wider basis of classification than this is necessary. A vault cannot be built without abutment; yet Quicherat declines altogether to take into account the vaulting of the aisles.‡ Nor ought one to leave out of account the vaulting of the crossing; or the system of top-lighting of the nave; or the tower system; above all, the planning, especially of the eastern limb. It is on a synthesis of these elements, among others, that a true scientific classification must be based.

Nor is much assistance to be gained from Viollet-le-Duc. In the article *Église* in the great *Dictionnaire* he sketches out seven Romanesque schools: those of France proper, Champagne, Burgundy, Auvergne, Poitou, Périgueux, Normandy. But in his report on the *Musée de sculpture comparée*, published in the *Journal Officiel* for 30th June 1879, he adds the schools of Provence, Languedoc, Saintonge, and Picardy. To these Anthyme Saint-Paul, in his critique on Viollet-le-Duc,§ insists on adding three or four more; in particular, an additional school of Limoges, which he has taken specially under his wing, and which certainly has claims to special recognition, if only for the great predominance of the square chevet over the apse in this district—that of the departments of Haute-Vienne, Creuze, Corrèze, and Lot.

To this subject of classification great attention has been given by Anthyme Saint-Paul. A full discussion of the subject will be found in his *A travers les monuments historiques de la France*. His results, as regards France, are summarised by him in his *Histoire monumentale de la France*‖ as follows:—

I.
1. *Rhenish: e.g.* Andernach, Rosheim.
2. *Provence: e.g.* Arles, Saint-Gilles.
3. *Burgundy: e.g.* Cluny, Paray-le-Monial, Autun.
4. *Nevers: e.g.* La Charité-sur-Loire.

* P. 138, 5th edition.
† Enlart, *Notes sur les sculptures exécutées après la pose*, in the *Mémoires de la Société des Antiquaires de France*, 1894.
‡ Brutails, *L'Archéologie du Moyen-Age*, p. 166.
§ P. 154, 2nd edition.
‖ P. 111.

II.
5. *Auvergne:* *e.g.* Notre-Dame du Port, Clermont; Issoire.
6. *Toulouse:* *e.g.* Saint-Sernin and Conques.
7. *Limoges:* *e.g.* Souillac and Beaulieu.
8. *Bourbonnais:* *e.g.* Souvigny and Saint-Menoux.

III.
9. *Périgueux:* *e.g.* Angoulême, Fontevrault, Souillac.
10. *Charente:* *e.g.* Saint-Croix, Bordeaux, and Angoulême.

IV.
11. *Poitou:* *e.g.* Poitiers; Notre-Dame, Saint-Hilaire, Montierneuf.
12. *Saintonge:* *e.g.* Saintes.

V.
13. *Loire:* from Saint-Martin, Tours, to Saint-Benoit-sur-Loire.
14. *France proper:* *e.g.* from Saint-Remi, Reims, to Saint-Germain-des-Prés, Paris.

VI. 15. *Normandy:* *e.g.* Caen.

On this classification a few remarks may be permitted. First, no distinction is made between pure styles and mixed styles. Yet that many of the examples given belong to more than one school is plain from the fact that Souillac, which is described as of the school of Limoges, has also to be characterised, by virtue of its domical system, as Périgordian. So Angoulême belongs both to the school of Périgueux and to that of the Charente. And what is true of individual churches is true of whole districts. The schools of Nevers and the Bourbonnais are confessedly but a blend of those of Burgundy and Auvergne. As for the type-church of the school of Nevers, La Charité, that was originally quite exceptional in plan. So also the school of Limoges is a mixture of those of Auvergne, Poitou, and Toulouse. So with others. Cut out the mixed schools, and Saint-Paul's list of fifteen styles may be greatly abbreviated. Secondly, the classification brings together things essentially different and separates things essentially similar. Saint-Hilaire, Poitiers, is about as similar to Notre-Dame-la-Grande as Macedon to Monmouth; on the other hand, it has striking points of resemblance to the cathedral of Le Puy; but the classification excludes it from the school of Auvergne, or rather that of Provence,* and inserts it in the school of Poitiers. Thirdly, there are certain buildings—buildings, moreover, of striking scale and importance—which will not fit into any of the above classes. There is the cathedral of Le Puy, which Saint-Paul admits is *d'une forte originalité*; there is Loches, there is Tournus. Fourthly, it seems not to recognise fully the existence of "outliers" or "exotics." Just as when a church was wanted for the English "colony" in Copenhagen, Mr. Street was commissioned to design it in the English Gothic; so when Saint-Hilaire, Poitiers, was built, the monks built it in the style of the mother church of the country from which they came. This was the case to a still greater extent in the twelfth century, when many a plan and construction is not of local origin at all, but imported by Cistercian monks—*e.g.* the tunnel-vaults of the aisle and the narthex of Fountains are not English, though they happen to be in England.

THE ROMANESQUE PROBLEM.

I am afraid, then, that the four classifications, as above, lead us but little forward. It remains to consider whether a wider basis of classification cannot be found; one resting on the main facts of plan and structure.

But first of all we may ask what was the one thing that all these builders—whatever the schools they belonged to—were trying to do. I think that, with the exception of a certain

* "In his accurate researches in *Les Arts en Poitou*, M. Berthelé has explained very happily, by the filiation of certain monasteries in Poitou, the Auvergne, Limoges, and Champagne arrangements of their churches."—Brutails, *op. cit.* p. 31.

number of them who were attempting to solve the church-building problem by following such types as S. Stefano Rotondo at Rome or S. Vitale at Ravenna, and whose furthest outposts, with the exception of the churches of the Knights Templars and the Knights Hospitallers, are to be found in the churches of Aix-la-Chapelle, Ottmarsheim, and Germigny-des-Prés, all the builders of Western Europe, from the ninth century, when Romanesque architecture commences, to the twelfth century, when it is superseded by Gothic, were engrossed with one supreme problem, and that was—How to vault a basilica. This was the one problem of problems for some three hundred years; the master-problem of the builders of the Middle Ages, from the end of the ninth to the middle of the twelfth century. The amount of real engineering skill, the ingenuity, and the variety of the solutions proposed are simply astonishing. They seem to me never to have had their full due. Gothic architecture gets nearly all the credit. As a matter of fact, every single one of the main difficulties inherent in the task had been effectually met—and met in more than one way—before the first Gothic architect ever handled a trowel. Early in the twelfth century, or before, at least five complete solutions had been arrived at: as may be seen at Le Puy, Tournus, Cluny, Speyer, and Durham. Many other solutions, less complete but still full of interest, remain for our study.

VAULTING OF NAVES.

As we have said, the problem was—How to vault a basilica. That is much in a few words. It means (1) that there are to be aisles, as well as a high nave; (2) that some form of vault-construction is to be devised; (3) that since a vault of stone is heavy, piers must be substituted for graceful, but weak, classical columns; (4) that the thrusts of the high vault of the nave must be stopped in some way by abutment in or above the aisles; (5) that top-lighting by clerestory windows is to be retained; (6) that the outer surface of the vault must be protected from the weather.

I. In most cases one or more of these conditions was evaded. One school, the most ancient of all, which held the whole of the field till the ninth century, simplified the problem by omitting the vault and retaining the colonnade. This produced a grand series of Romanesque basilicas, from the classical basilicas of early date, such as the eighth-century church of S. Sauveur at Brescia,* right on to churches more and more Romanesque in general aspect, some built as late as the thirteenth century, such as Torcello; St. Miniato, Florence; Monreale, Sicily; Pisa, Lucca, Salerno, and Genoa; S. Abbondio, Como†; Constance and Schaffhausen; the Hildesheim churches‡; Saint-Genou,§ Berry; St. Peter's, Northampton. But to omit the vault was to omit the one crucial difficulty; and this unworthy solution we may set aside.

II. A second solution—also very incomplete—was to omit the aisles: to build a hall-church roofed with a tunnel-vault. This simplified the question of supports; for it substituted solid walls for hollow arches, any amount of clerestory light could be introduced, and the walls could be thickened to any extent to provide continuous abutment to the thrust of the great tunnel-vault. Everywhere it was the natural and proper solution where only a small church was required, but it was employed in Provence even in churches of cathedral rank. Examples of the Romanesque hall-church may be seen at St. Honorat-de-Lérins,‖ Cavaillon,¶ Orange. About 1140 it culminated in the grand cathedral of Saint-Maurice, Angers, with

* Plan in Cattaneo's *Architecture in Italy*, Figs. 61 68.
† Dehio und von Bezold, *Die kirchliche Baukunst des Abendlandes*. Plates 66 and 74.
‡ *Architectural Record*, New York, vol. ii. 1.
§ Corroyer's *Architecture romane*, p. 179.
‖ *Ibid.*, p. 170.
¶ Revoil, *Architecture romane du Midi de la France*. II. Plan 25.

Gothic vaulting. In the south it was translated into Gothic in the cathedrals of Bordeaux, Béziers, Carcassonne, Albi, and Gerona, and the once splendid church of the Cordeliers at Toulouse. But this incomplete solution also we may set aside; to leave out the aisles was to omit a primary condition of the problem. In some cases the church was vaulted with a groined or ribbed vault. This also we may disregard.

III. A third method, represented by the school of Périgueux, also removes the difficulties of supports, abutment, and top-lighting by eliminating the aisles. It presents us with another variety of hall-church; roofed, not with a tunnel, but a row of domes; and it is to be noted that the corners of each square bay of the nave are filled in with pendentives to support the domes. The earliest churches of this type probably possessed neither aisles nor transepts; *e.g.* Saint-Étienne, Périgueux, dedicated 1047, and Cahors, dedicated 1119. Later on, naves of churches in the form of a Latin cross, such as Fontevrault and Angoulême, were also roofed with domes. (The westernmost bay of Angoulême, which is ruder than the rest, appears to belong to a church completed in 1017.*) The style culminates in Saint-Front, Périgueux, in which the form of the Greek cross is adopted. The accuracy of the masonry of the domes and pendentives of Saint-Front proves that it was one of the last of the type built; it was probably commenced after the fire of 1120.†

FIG. 2.—SAINT-FRONT.

IV. The next method is quite exceptional. It is found only in the extraordinary church of Loches, near Tours. Originally there was a low tunnel-vaulted nave, without aisles, of the eleventh century. But about 1160 the eastern portions of the nave were pulled down; two square bays were formed; and on these bays two spires were erected. Loches is just Saint-Hilaire, Poitiers, roofed with spires instead of domes. As at Saint-Hilaire, the side-wall of each bay is pierced with a pair of windows, and the angles of the spires are supported by squinches.‡

We may now turn to those groups of churches in which aisles are retained.

V. In two churches of the first rank a row of domes was employed to roof an aisled nave. An earlier use of the dome was to roof the crossing; but the Romanesque builders also employed it, with remarkable boldness, to roof a nave of several bays. The nave, as in the Syrian churches, was spanned by a series of strong arches. These were so placed as to divide the nave into square compartments. On each square an octagonal dome was poised, the corners of the square being filled up with corbelling or squinches to afford support all

* Barr Ferree, *French Cathedrals*. Part XVI.

† R. Phenè Spiers in JOURNAL OF THE R.I.B.A., Vol. III. 3rd series, p. 233.

‡ For drawing of exterior by A. H. Haig, see *Architect*, February 1, 1879. Section in Choisy, *Histoire*, II., 201. Plan in Dehio, *op. cit.*, Plate 102, and section in Plate 110.

round to the base of the dome. The typical example of this is the wonderful cathedral of Le Puy,* the nave of which is roofed by a row of six domes on squinches. Clerestory windows are provided beneath each dome. There is a groined aisle on either side, except in the westernmost bays, which have heavy roll-ribs. All the six domes are sheltered by a timber roof, and are therefore not visible from outside. Thus the great mediæval problem is solved completely in a most original and surprising fashion. The other great type is the church of Saint-Hilaire, Poitiers, which has recently been to a large extent rebuilt. It differs from Le Puy in three ways. First, the squinches of the domes are small, and the square is converted into an octagon with four long and four short sides; this shape of the octagon is faithfully reflected in the dome above. Secondly, it has two aisles on either side of the nave; the inner aisle very narrow and very lofty, the outer aisle low and broad; the same disposition of the aisles is to be seen in the Romanesque nave of the Cluniac church of Souvigny, near Nevers. The inner aisle of Saint-Hilaire is two stories high, in this respect resembling Saint-Sernin, Toulouse, not Souvigny. Thirdly, by attenuating the squinches, room is found for two clerestory windows in each bay instead of the one of Le Puy. The domes, as at Le Puy, are hidden by a timber roof.

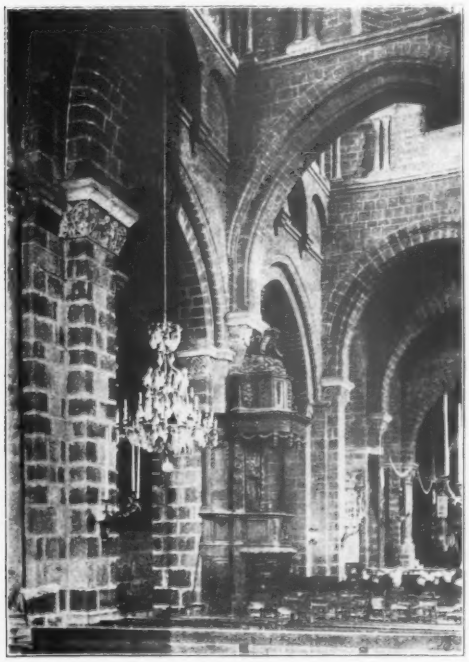

FIG. 3.—LE PUY. NORTH SIDE OF WEST BAYS OF NAVE.

VI. At Arles and Nimes, and no doubt here and there elsewhere throughout the broad extent of the Roman Empire, a curious method, which we may call "arch and panel," was adopted. The *rationale* of it, as of almost all Roman and Byzantine methods of construction, was the desire to economise centering. Instead of building a tunnel-vault on elaborate and expensive centering, the Romans sometimes built a narrow arch on a centre; and then, removing that centre and re-using it, built another arch a little distant from the first and parallel to it. Then the arch was built up till horizontal; and the space from the wall carried by one arch to the wall carried by the next arch was bridged over by flat panels. In this way, using but one narrow centre, a tunnel of any length, carrying a flat stone ceiling, could be constructed with a minimum cost in centering.† Now it happens that in many districts of Northern and Central Syria blocks of basalt of ten feet or more in length are common. The same method as above was adopted, except that long basaltic lintels were employed, and not panels. We may distinguish it as the "arch and lintel" system. Strong transverse arches were built across the nave, about nine feet apart; a wall was built on each arch rising up to the apex of the arch; and then the lintels of basalt were laid longitudinally—*i.e.* from west to east. The transverse arches, however, had considerable thrust; this was provided against by a

* See *L'architecture religieuse à l'epoque romane*, par Thiollier; Le Puy.

† Choisy, *L'art de bâtir chez les Romains*, Plate 16.

buttress held in place, as in a vice, by a tunnel on its eastern and another on its western side. For still greater security,* another row of tunnels, also set transversely, was built on the top of the lower row, on each side of the nave. In fact it was the Roman system of internal buttressing as practised in the Basilica of Maxentius, except that in the Syrian examples there is an upper as well as a lower aisle, ceiled in stone. The walls are merely screens. Both the upper and the lower aisle walls might be pierced with windows, as at Peterborough; but the side-light thus obtained would not be very effective; and probably in the bright climate of Syria sufficient light was obtained from windows in the apse and the west front. The flat ceilings of the nave and the upper aisles were built up into terraces of slight slope, providing a roof wholly fireproof. Count de Vogüé has fully illustrated this curious phase of architectural history in *La Syrie centrale*. The whole district has been deserted since the first Mahommedan raids in the seventh century. Tafka and Chagga are typical examples. There is no clerestory lighting.

FIG. 1.—TOURNUS. NAVE FROM NARTHEX.

VII. We now come to a whole series of attempts to solve the problem by covering an aisled nave with what is called a tunnel, wagon, barrel, or cradle-vault. Of these by far the most scientific is that of Tournus abbey-church. Being so scientific and successful, it is all the more extraordinary that, so far as I know, it was nowhere imitated. As in the churches of Syria, the nave was spanned by stout arches, each arch carrying a wall. But each pair of these walls, instead of carrying lintels, as in Syria, carries a short tunnel set *transversely*. The construction is that of many a railway viaduct of brick, if its supports are not solid walls, but consist of two piers carrying an arch. Stand underneath such a viaduct, and look from one end of it along its under surface, and you get just such a vista as that in the nave of Tournus. The supreme merit of the solution is that the thrusts of the tunnels balance one another; as they run, not to north or south, but to east and west, just as they do in the arches of any bridge or viaduct. The only exception is the extreme arch at each end. At Tournus the thrust of the westernmost arch is stopped by a heavy western wall; the thrust of the most eastern arch is neutralised by building a heavy central tower. The lateral thrusts of the transverse arches are but slight. At Tournus, however, abutment is provided against these also by carrying the aisles up to an exceptional height. The aisles are groined. Inside each tunnel, on either side, a clerestory window is placed. A timber roof shelters the row of five tunnels. All the conditions of the problem are satisfied at Tournus nave so early as the first half of the eleventh century.†

* Or, perhaps, rather to facilitate the construction of one single roof for nave and aisles.

† For plan and sections see *Archives des monuments historiques*: iii., 8 and 9. A consecration took place in 1019; but this may have been of the choir, which seems to me to have been rebuilt and provided with ambulatory and chevet in the twelfth century.

VIII. Tournus is quite exceptional. We now come to the vast number of churches in which the tunnel-vault of the nave was placed longitudinally—*i.e.* in the direction of the axis of the church. The difficulty is to know how to classify churches so varied in design. Quicherat took as his "fundamentum divisionis" the form of the tunnel, whether semicircular or pointed. But as M. Brutails* points out, in the Cathedral of Elne the central bays have a semicircular, the western bays a pointed tunnel. According to Quicherat's classification, the two sets of bays would not fall into one class; but one would be sorted off with Saint-Sernin, Toulouse, the other with Saint-Trophime, Arles. Moreover, in Provence the pointed tunnel is the normal, and the semicircular the abnormal type of tunnel.† Other criteria suggest themselves—*e.g.* (1) the number of stories in the interior, whether one, two, or three; (2) whether there is a single vaulted aisle or an upper and lower vaulted aisle; (3) the presence of a clerestory; (4) the system of abutment in the aisles; (5) the thickness and heaviness, or the thinness and lightness, of the tunnel itself; (6) the system of external roofing, which is connected with the last-mentioned. For, if the tunnel be a thin shell, it must be covered with a timber roof; if it be thick and strong, the whole roof, externally and internally, may be solid stone. Of these criteria the second and third seem to me to be the most important. We will therefore divide the naves vaulted with longitudinal tunnels into those:

FIG. 5.—NOTRE-DAME, POITIERS.

(*a*) Where the tunnel rests on a pier-arcade;

(*b*) Where the tunnel rests on the arches of an upper vaulted aisle;

(*c*) Where the tunnel rests on a wall pierced with clerestory windows.

The great danger in the employment of the longitudinal tunnel, especially where, as in Provence, it was thick and heavy and served also as external roof, was its strong lateral thrust. That could be dealt with most easily by causing the tunnel to spring from as low a level as possible. Therefore, although it involved the sacrifice of clerestory lighting, the tunnel was set directly on the pier-arches, with the result that the church was gloomy in the extreme. Saint-Martin d'Ainay‡ at Lyons is an early example—early eleventh century. Here, as at Saint-Savin§ in the department of the Vienne, founded in 1023, the supports consist still of classical columns, the weakness of which makes it all the more necessary to keep the church low. This method of construction is particularly common in Poitou, and is seen in a highly enriched form in Notre-Dame, Poitiers.‖ But it is also the method employed in many of the larger

* *L'Archéologie du Moyen-Age*, p. 172.

† Mérimée, *Notes d'un voyage dans le Midi de la France*.

‡ Dehio, *op. cit.*, plans and sections, 117, 122, 125.

§ *Architectural Review*, ii. 9, 99.

‖ *Archives des monuments historiques*, ii. Plates 7 and 8.

churches in Provence; it occurs sporadically all over France as far north as Saint-Loup-de-Naud,* near Provins; a good example is seen in the Swiss church of Granson,† and there are many in Spain. But because it is especially common in Poitou and the neighbourhood we may distinguish it as the Poitevin method. One universal characteristic of churches of this type is the great height of the aisle proportionately to that of the nave. We may incline to find scientific reason for this in the abutment provided in the aisle, which would have been less effective if the aisle were low. But perhaps it is not wise to attribute too much science to the tenth- and eleventh-century builders who originated this type of church. Advantages of a more practical character weighed with them. In the first place, a lofty aisle left plenty of space for aisle windows, which in times of insecurity ‡ it was desirable to have high up in the wall. Secondly, if the aisles were nearly as high as the nave, one external roof, instead of three roofs, would cover the whole building; this would be particularly convenient where, as in Provence, there was no external roof of wood.

The mode of abutment varies. Sometimes both aisles and nave have longitudinal tunnels. Those at Saint-Nazaire, Carcassonne, § are semicircular (though the nave has a pointed tunnel). Sometimes, as at Melle, the aisle tunnel is pointed. We may, if we choose, credit the builders with utilising the principle of Opposing Thrusts; the aisle-tunnels being raised high so that their inward thrust may neutralise to some extent the outward thrust of the nave tunnel. Other examples of aisle-tunnels are Saint-Martin d'Ainay, ‖ Lyons, and Saint-Honorat-des-Lérins,¶ both probably of early eleventh-century date.

Sometimes, but very rarely, the system employed in the aisles of the Basilica of Maxentius was adopted. The aisle was roofed with a row of short tunnels set transversely. Hauterive,** in Savoy, is an example. So massive and effective is the system of abutment secured by a row of transverse tunnels that it is surprising that it was adopted so very seldom.

Sometimes the principle of Transmission of Thrusts is utilised by the employment of a demi-berceau, which is really a continuous flying buttress. Examples are to be seen at Fontefroide,†† a Cistercian church built towards the middle of the twelfth century; at Granson ‡‡ in Switzerland, eleventh century; at Vieux-Parthenay §§ and Silvacanne,‖‖ twelfth century.

The most common method was to cover the aisles with groined vaulting, as at Saint-Savin, *c.* 1025, and Notre-Dame, Poitiers, twelfth century.¶¶

IX. Such interiors, however, as that of Notre-Dame de Poitiers were painfully low. It would have been dangerous, however, to raise the tunnel much by increasing the height of the piers. So, in Auvergne especially, the expedient was hit upon of building two aisles instead of one, both vaulted: then the tunnel could spring at a much higher level. Moreover, some of the gloom of the Poitevin type of nave could be dispelled by piercing the back wall of the new upper aisle with windows. Thus light would enter through two tiers of aisle windows, both across the upper and the lower aisle. Perhaps the addition of an upper aisle was first accomplished in Auvergne in the church of Notre-Dame du Port, Clermont,*** which is eleventh-

* Dehio, *op. cit.*, plans and sections, 146, 149, 153.

† Fergusson, *History of Architecture*, ii. Section 691.

‡ *Cf.* the position of the windows of the pre-Conquest churches of Worth and Wing with those of Notre-Dame, Poitiers, and Saint-Savin.

§ Fergusson, *History*, ii. Section 456.

‖ Sections in Dehio, *op. cit.*, iii. Plate 122.

¶ *Ibid.*

** Plan in Dehio, *op. cit.*, Plate 118, and section in Plate 99, and in Choisy's *Histoire*, ii. 214. Compare the transverse tunnels of Orange cathedral, Choisy, *loc. cit.*; of Saint-Remi, Dehio, *op. cit.*, Plate 46; of the lower narthex of Tournus, and the aisles of Fountains nave.

†† Fergusson, *Hist.*, ii. Section 553.

‡‡ *Ibid.*, Section 691.

§§ Dehio, *op. cit.*, Plate 123.

‖‖ *Ibid.*

¶¶ For illustrations of the architecture of Poitou, see Robuchou et Ledain; *Paysages et monuments du Poitou.*

*** Sections in Dehio, *op. cit.*, Plate 130.

century work; and of which Issoire * is an enlarged version. This type appears as far away as Conques,† and Saint-Sernin,‡ Toulouse, and Santiago cathedral, in Spain,§ said to have been commenced in 1078. In none of the above is there any clerestory lighting. In churches of this type the upper aisle seems always to be vaulted with a demi-berceau. This facilitates the construction of a single solid roof to cover nave and aisles alike, as at Issoire. ‖ The nave tunnel and the demi-berceaux are thick and strong because their outer surfaces form the external roof. All the lower aisles that I have seen have groined vaults. The only weak point in such a design as that of the magnificent church of Issoire is the absence of clerestory light.

FIG. 6.—ISSOIRE, FROM SOUTH-EAST.

X. The first step to carry out the one unfulfilled condition in the problem—the provision of clerestory light—was taken by piercing the base of the tunnel itself with clerestory windows. This was done at first in very timid fashion in such examples as Payerne,¶ La Palud and Vaison cathedral **; in all these the openings were small, and, in consequence of the great thickness of the haunches of the tunnel, had to be widely splayed internally. A step in advance is seen at Thil-Châtel,†† between Dijon and Langres, where the tunnel is penetrated by windows of respectable size. A third advance appears at Saint-Benoît-sur-Loire, ‡‡ which like Payerne is eleventh-century work, and at Châteauneuf, §§ where the windows are inserted partly in the tunnel, partly in a clerestory wall. The final step was to insert the windows wholly in a clerestory wall. This was a most important change. It seems to have been accomplished independently in the south, in Provence and Languedoc; in the north, in Burgundy as far west as the Loire. The clerestory was already in use in tunnel-vaulted churches in the eleventh century at Saint-Guilhem-du-Désert, ‖‖ in the Southern Cevennes; and in Burgundy on a small scale at Saint-Benoît-sur-Loire (commenced 1062), and on a gigantic scale at Cluny (commenced 1089).

In Provence, in order to have solid stone roofs, the abutment of the new clerestory wall usually took the form of a demi-berceau, as at Vaison,¶¶ where it is of very primitive character, and at Saint-Trophime,*** Arles. With the adoption of the demi-berceau as the aisle-vault, no triforium arcade was possible; and, consequently, these Provençal interiors are but two stories high. In Burgundy, on the other hand, the aisle-vault seems to have been

* Sections in Dehio, *op. cit.*, Plate 130.
† *Ibid.* ‡ *Ibid.*
§ Perspective in Fergusson's *History*, ii. Fig. 929.
‖ Fergusson's *History*; plan and sections, ii. 592, 593, 594.
¶ Dehio, *op. cit.*, Plate 136.
** Dehio, *op. cit.*, Plate 134.
†† *Ibid.*, p. 401.
‡‡ *Ibid.*, Plate 142.
§§ *Ibid.*, Plate 141.
‖‖ Dehio, *op. cit.*, Plate 134, and Revoil, *op. cit.*
¶¶ *Ibid.* *** *Ibid.*

invariably groined, and this groined vault was protected by a wooden lean-to roof. This rendered possible a triforium; and, consequently, the Burgundy interiors are three stories high.

But such clerestory walls as those of Burgundy, carrying lofty tunnels—the existing transept of Cluny is 110 feet high beneath the tunnel—were exceedingly dangerous. The builders were somewhat timid, therefore, about piercing the clerestory wall. In Autun cathedral, though it is twelfth-century work, only one window is inserted in each bay of the clerestory; at La Charité-sur-Loire and Beaune there are two; Paray-le-Monial* ventured to insert three. Secondly, clerestory buttresses† were added, as at Paray-le-Monial, but they could not have been of much service in resisting the continuous thrust of a tunnel. Later on, in very unscientific fashion, flying buttresses were added to the nave of Autun; and, judging from old prints, to the nave of Cluny also. Thirdly, all these high tunnels were pointed, in order to bring the thrust down more vertically. Fourthly, the vault itself, instead of being thick and heavy, as in the Auvergne churches, became a light shell, sheltered by a wooden roof.‡ Fifthly, a still more effective and scientific precaution was taken, which, I think, is not usually recognised. If such an exterior as that of Paray-le-Monial§ or La Charité be examined, it will be seen that the windows are placed remarkably low down in the clerestory wall. The fact is, this wall is built many feet up above the spring of the tunnel in order to weight the wall below, which acts both as a support and as an abutment to the tunnel within. The thrust of the tunnel is continuous, and by raising the whole length of the clerestory wall the builders have succeeded in laying a continuous weight on the abutment below. What the Gothic pinnacle does for the buttress, that the raised clerestory wall does for the wall below. The Romanesque is as scientific and as successful as the Gothic application of the principle of weighting in the pinnacle. It was applied as far back as the Pantheon, where the wall which provides support and abutment to the dome is, for precisely the same reason, carried far higher than the springing of the dome.

FIG. 7.—PARAY-LE-MONIAL. FROM SOUTH-EAST.

In such churches, therefore, as Paray-le-Monial and Cluny, of which Paray is a reduced copy, the great mediæval problem was fully solved in magnificent fashion.

All the above churches—like the two-storied churches of Provence and Languedoc, and the three-storied churches of Burgundy—are without an upper aisle. But at Nevers there exists a clerestoried church of the first rank, Saint-Étienne,‖ commenced in 1063, and

* *Archives des monuments historiques*, iii. 5 and 7.
† *Ibid.*
‡ Choisy, *Histoire de l'architecture*, ii. 217.
§ *Archives des monuments historiques*, iii. 5 and 7.
‖ Dehio, *op. cit.*, Plan and Sections, 119, 130, 131.

consecrated, in part at least, in 1097, which has both upper and lower aisle. Moreover, it has a square western tower in the centre of the façade, and an octagonal tower over the crossing. These two facts point to a connection with Auvergne; the clerestory, to a connection with Burgundy. Plainly it was commenced by the founder, the Comte de Nevers, as a church of the gloomy Auvergne type; but when the Comte presented it to Abbot Hugh of Cluny it was finished with a Cluniac clerestory. It is a blend of the Romanesque of Burgundy and Auvergne.

FIG. 8.—PARAY-LE-MONIAL. FROM NORTH-EAST.

This concludes the experiments of the builders with the tunnel form of vault. I have treated them at some length, because to us in England they represent a type of Romanesque which is unfamiliar, and which has not received detailed analysis in English archæological literature. On the other hand, the ground now to be traversed is familiar to all, and I propose to make but a cursory survey of it.

XI. This solution, which was destined, within a generation or two, to culminate in the Gothic architecture of Saint-Denis (1140), consists in covering a nave with unribbed groined vaults (which, for convenience, I have spoken of throughout this Paper as groined vaults). The early date of 1083 is claimed for the groined vault of the choir of Saint-Nicolas, Caen.* Two other early groined vaults, both vast in scale, are those of Speyer cathedral and the Cluniac abbey of Vézelay. Speyer nave† was practically rebuilt after 1080, and was completely finished in 1106; its vault, therefore, may be dated *c.* 1100. The nave of Vézelay‡ was probably built after the fire of 1120. Its groined vault is a complete breaking away from Cluniac tradition, which had developed in preference the tunnel vault. In the new groined vaults clerestory light was easily obtained, but not proper abutment. At Speyer resistance seems to be obtained by the enormous thickness of the clerestory wall, and of the piers and of the arches, purposely narrowed, by which it is supported; also by carrying up the clerestory walls, as at Cluny, Paray-le-Monial, and La Charité-sur-Loire; at Vézelay it was, in the end, found necessary to add flying buttresses.

XII. The final step was to substitute the ribbed for the groined vault, to dispose the vaulting compartments of the nave in oblongs, to facilitate the vaulting of these oblongs by the application of the pointed arch, and to transmit the thrusts of the high vault by means of flying buttresses to the buttresses of the aisle walls.

To this Gothic architecture added three developments: (1) it weighted the buttresses with pinnacles; (2) it placed the flying buttresses *above* the aisle-roofs; (3) to a large extent it replaced the masonry of the walls by glass.

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* Ruprich-Robert, *L'architecture normande*, Plan VIII.

† Dehio, *op. cit.*, Book II. c. xii. page 462.

‡ *Archives des monuments historiques*, iii. Plates 10 and 11.

The credit of solving the problem first with ribbed vaulting cannot yet be ascribed with certainty to any one country or district. The nave of S. Ambrogio, Milan, has archaic ribbed vaulting. Its nave, according to Cattaneo,* was rebuilt in the second half of the eleventh century; and in 1196 the damages were repaired which had been caused by the fall of a vault in the nave. The choir of Saint-Denis received a ribbed vault 1140–1144. The naves of Sens and Angers cathedrals, both of which have ribbed vaults, were also commenced *c.* 1140.† In Normandy Lessay ‡ was completed in 1130; it has a ribbed vault. Mr. Bilson has adduced strong evidence § that the existing ribbed vault of Durham nave was completed in 1133, that the transept vaults were finished earlier still, and that the choir may possibly have been vaulted *c.* 1100.

In Durham nave, the Abbaye-aux-dames, and elsewhere, abutment was sometimes provided by flying buttresses disposed beneath the aisle-roof. In Gothic the flying buttresses are placed above the aisle-roof.

XIII. This solution was no solution. It consisted in omitting the vault. The nave, however, is not constructed in genuine basilican fashion, as in the first method, but is built as if a vault were intended. The home of this unworthy construction is Normandy, but unvaulted Romanesque naves were constructed at any rate as far east as the great abbey-church of Saint-Remi, Reims. ‖ The two great abbey-churches of Caen were not vaulted till a date fixed by M. Regnier *c.* 1130, but by M. Lefèvre-Pontalis *c.* 1160. Nearly all the Romanesque churches in England were still unvaulted at the end of the twelfth century.

Of the above solutions of the vaulting problem we may at once set aside the first, in which the basilica retains the column; of this perhaps the finest example is S. Abbondio, Como.¶ Outside Italy this type is quite exceptional. The sixth, the "arch and lintel" system, never passed outside of Syria, and does not concern us. Three more solutions failed to create schools, and may be dismissed—the fourth, that of Loches; the fifth, that of Le Puy and Saint-Hilaire, Poitiers; the seventh, that of Tournus. Groined naves are comparatively few, and in principle do not greatly differ from ribbed naves; so we may eliminate the eleventh solution. This leaves us with seven or eight solutions: No. 3, the dome and pendentive; No. 2, the hall-church; No. 8, the tunnel-vault, with single aisle, without clerestory; No. 9, the tunnel, with upper and lower aisle, without clerestory; No. 10, the tunnel, with clerestory; No. 12, the ribbed vault; No. 13, the unvaulted nave.

Of these the third, the employment of a dome resting on pendentives, is by itself a full and satisfactory criterion. It occurs nowhere except in a group of some thirty-five churches in the district of Périgueux, with such "outliers" as Fontevrault and Angoulême.

No. 2, the hall-church, is most common in the south-west and south of France, from Poitou to Provence. It may be vaulted either with a longitudinal tunnel or with groined or ribbed vaults.**

No. 8, where a tunnel-vault rests directly on the pier arches, occupies much the same districts as No. 2.

No. 9, where the tunnel rests on the arches of an upper aisle, extends from Clermont-Ferrand in Auvergne to the south-west as far as Conques and Toulouse.

No. 10A, where the tunnel is combined with a triforium and clerestory, is the final development reached in Burgundy.

* Cattaneo, *Architecture in Italy*, p. 247.
† Anthyme Saint-Paul.
‡ Ruprich-Robert, *op. cit.*, Plan 8.
§ Journal of the R.I.B.A., 3rd series, Vol. VI., Nos. 9 and 10.
‖ *S. Remi*, par Gosset, 1900, Plates 1 and 2.
¶ For the Basilican type see Hubsch, *Die altchristlichen Kirchen*; also Mothes, *op. cit.*, and Rohault de Fleury, *La messe et ses monuments*.
** Dehio, *op. cit.*, Plate 93.

No. 10B, where there is tunnel and clerestory, but no triforium, is the solution of PROVENCE, and of Piedmont.*

No. 12, the ribbed vault, occurs sporadically, except in GERMANY and LOMBARDY, where it is characteristic.

No. 13, the unvaulted nave, was nearly universal in NORMANDY and England till the twelfth century was well advanced, and is found sporadically elsewhere.

PLAN.

We may now proceed to see how these eight divisions will stand other tests. A very important test is afforded by the planning of a church, especially of its eastern limb. Unfortunately, no part of the churches has suffered so much as the choir. In England there is not a single cathedral choir but was rebuilt, enlarged, or remodelled after the year 1175. But in France this process of reconstruction set in much earlier. Many Romanesque choirs were remodelled even in Romanesque days. This is not always fully recognised, and much misunderstanding has arisen from ignorance of the fact that the present eastern limb, even though Romanesque, is not always the original one. Many a church which was triapsal was converted into a "chevet" church, *e.g.* the great Cluniac church of La Charité-sur-Loire.‡ Others, which had a "chevet" already, were given a larger one, with perhaps a double ambulatory. It is not possible here to enter at length into all the ramifications of Romanesque planning; it must suffice to trace four main types of choir-plan.

The first is that with three parallel eastern apses, of which there is a variant with square-ended aisles, as at Cerisy-la-Forêt,§ and another with aisles square externally and semicircular internally, as at Romsey. This is pre-eminently the plan where the unvaulted nave prevails, viz. NORMANDY. It is frequent in LOMBARDY and in those PROVENÇAL churches that have aisles.

A second plan is that of the ambulatory and "chevet."‖ It is rare in Germany, Lombardy, and Provence, and non-existent in Normandy (excluding England). Its region is partly conterminous with that of the tunnel-vaulted churches—viz. POITOU, AUVERGNE, and BURGUNDY; in fact, it is the predominant type in Burgundy and all Southern France except Provence and the Périgordian region.

In GERMANY characteristic plans are (1) an apse without ambulatory or chevet, as at Mayence and Speyer; and (2) three apses, disposed to east, north, and south, as in S. Maria in Capitolio, Cologne. Other eastern plans are found. But the special feature of German planning is the occurrence of an apse at the west as well as at the east end; and of a western transept, as at Mayence and Laach. The western apse was probably a characteristic of German Romanesque from the very first; it occurs in the ninth-century plan of the Benedictine church of Saint-Gall.¶ The plans alone, apart from other considerations, would entitle Germany, with Switzerland, to rank as a distinct architectural province.

In PROVENCE, of course, the planning depends on the presence of aisles. Its aisled churches generally have three parallel eastern apses.

The "chevet" plan is later in origin, and altogether a higher development than plans with a single apse or triple apses—which, indeed, it has often superseded. We may, therefore, perhaps come to the important conclusion that the earlier developments of Romanesque are

* De Dartein, p. 500.

† At Canterbury also Lanfranc's choir was rebuilt by Priors Ernulph and Conrad.

‡ Dehio, *op. cit.*, Plans 120 (2), and 121 (3).

§ Ruprich-Robert, *op. cit.*, Plate 54 (7).

‖ I use the term "chevet" in the sense of a ring of chapels encircling an apse or an ambulatory.

¶ Fergusson, *History*, ii. Plan 686.

due mainly to those districts where the "chevet" plan now prevails—viz. Burgundy, Auvergne, the West of France, and to some extent England, and that the prevalence of other forms of planning is a mark of retrograde Romanesque.

CENTRAL TOWER.

We may test our divisions again by the treatment of the central tower: (1) its vaulting; (2) its shape, whether square or octagonal.

The Romanesque builders had three forms of vault at their disposal in the eleventh century: the groined vault, the tunnel-vault, and the dome. The most difficult problem they had to cope with in vaulting was the question of putting a vault over the crossing, resting not on walls, but on four unbuttressed legs. They had hardly dared yet to put a groined vault over their naves, fearing its concentrated thrusts. Their favourite tunnel-vault could not be used at all at the crossing, for it needed solid walls for its support. They had perforce to use the dome—in all cases, I think, except in the Périgueux district, resting on squinches.

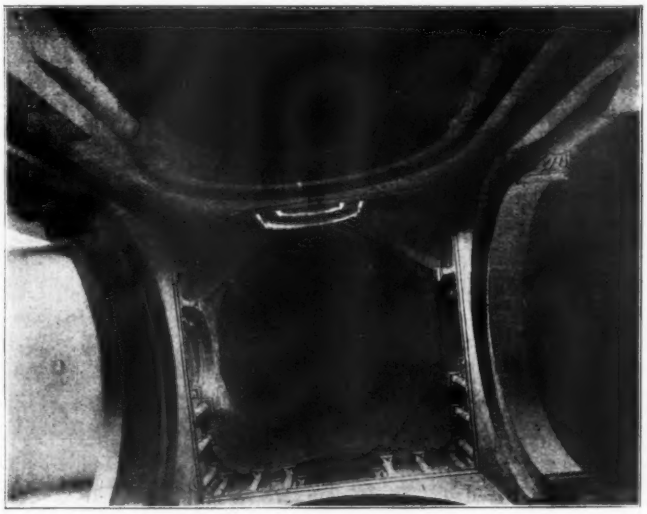


FIG. 9.—TOURNUS. INTERIOR OF CENTRAL DOME.

Secondly, they had to stop the thrusts of this dome by carrying up a central tower to weight the arches or walling on which the dome rested.* As regards the shape of this tower, they had two alternatives. The crossing was square, and so the tower over it might be square, as was the great central tower of Cluny and the magnificent central tower of Tournus. But the squinches reduced the square of the crossing to an octagon; and as the tower rested directly on the octagon, and not on the square, it was more natural that the tower also should be octagonal. Hence that magnificent series of octagonal central towers in BURGUNDY and SOUTHERN FRANCE, GERMANY, and LOMBARDY, culminating at Mayence and Saint-Sernin, Toulouse. In NORMANDY and England, on the other hand, the builders hardly ever dared to vault their naves at that early date, and never the crossing. And there being no dome in an Anglo-Norman tower, it is almost always square.

The treatment of the central tower, as well as the general absence of vaulting in the nave, therefore, sharply separates off Normandy and England from all the other Romanesque regions.

* If I am right, the existence of central towers is due to the presence of domes over the crossing; and, further, the origin of transepts is not to be found in symbolical reasons, but in the necessity to provide abutment to the north and south to central towers. It should be remembered, however, that a central tower (like the central domes of Le Puy and Angoulême) was also valuable for lighting purposes.

TOWER GROUPS.

The grouping of the towers affords another valuable test.

(1) The glorification of the tower reaches its highest pitch in GERMANY. There were four towers at Paulinzelle, Saint-Castor, Coblentz, and the Apostles' Church, Cologne. Six towers are found at Speyer, Worms, and Laach, * seven at Limburg and at Tournai. To such wealth of towers there are few parallels elsewhere. At Cluny there were six towers; eight, if the staircase turrets of the central transept be included. Saint-Martin, Tours, seems to have had five towers, of which two remain. Canterbury was designed by Prior Conrad to have five towers. In the Early Gothic cathedrals from five to nine towers were projected, *e.g.* at Laon, Saint-Denis, Rheims, Chartres; but in no case were they ever completed.

(2) In BURGUNDY the magnificent tower group of Cluny seems to have remained without a rival. Its daughter churches, La Charité, Souvigny, Paray-le-Monial, and Vézelay were satisfied with a triplet; an octagonal central tower and two square western towers was the favourite arrangement. The towers have several stages, similar in form.

(3) In NORMANDY also the triplet was the favourite, but the central tower was square, and not domed internally.

(4) In POITOU—*e.g.* Notre-Dame, Poitiers, Bassac, Fénioux,† the characteristic is the conical spire, "en pomme de pin," which often surmounts the tower.

(5) In the PÉRIGORDIAN region is seen the same conical spire, *e.g.* on the campanile of Saint-Front, together with the characteristic cupolas.

(6) In PROVENCE "a simple square tower is common, with a very low spire." ‡ But some—*e.g.* Saint-Martin-de-Londres and Le Thor—have central octagons.

(7) In AUVERGNE, Orcival has one tower, Saint-Nectaire has three. But a specially characteristic arrangement is that of a square western tower in the centre of the façade, and a central octagon. This is seen at Issoire; Brioude; Notre-Dame du Port, Clermont; Saint-Étienne de Nevers, which, as pointed out above, § is mainly an Auvergne church; and is particularly common to the west of Auvergne, in what Anthyme Saint-Paul ‖ calls the Limousin region, *e.g.* at Le Dorat. ¶ The towers are always of two stories, and often rest on an oblong basement.

The Toulouse region, which is closely connected with that of Auvergne, is distinguished from it by the poorness of its western towers, which are plain, simple structures, not crowned with spires.**

(8) In NORTHERN ITALY the campanile type greatly predominates; and where the massive Romanesque tower is found, it is usually divided, in campanile fashion, into very numerous stages. Nowhere, except in the Como churches, does the campanile form part of the structure of the church; often it is quite detached.

It would appear, then, from this brief survey, that in the vaulting, form, and number of the towers we have a valuable criterion in delimiting the frontiers of the various Romanesque provinces.

SUMMARY.

Space does not permit me to push the analysis further. There are other data which certainly ought to be considered before laying down any final classification, such as the plan

* For view of Laach see Whewell, *Architectural Notes on German Churches*, Plate III.
† Dehio, *op. cit.*, Plate 277.
‡ Choisy, *Histoire*, ii. 246.
§ See division X. above, p. 279.
‖ *Histoire monumentale*, p. 118.
¶ View in Dehio, *op. cit.*, Plate 252.
** Anthyme Saint-Paul, *Histoire monumentale*, p. 117.

and vaulting of the transept, and also of the apse, the form of the supports, the ornamentation and sculpture, &c. And the analysis should be pushed into the work of the countries adjacent to France, so as to include the whole field of Romanesque in Italy, Germany, Switzerland, Spain, the Low Countries, and Scandinavia. It would also be necessary to distinguish between the Romanesque of the eleventh century and its developments and final form in the twelfth century. For the present I must be content to discriminate the following eight schools of Romanesque, leaving the classification to be revised and extended by others. I have added various minor characteristics.

I. The PÉRIGORDIAN school. The leading characteristic is the dome on pendentives, and consequently the absence of aisles. Sometimes a "chevet" of chapels is found, as at Saint-Jean de Cole, Cahors, Solignac, Souillac, and Angouleme; but as there are no aisles, there is no ambulatory, except at Fontevrault,* which is geographically an "outlier." In the eleventh century the domes had solid stone roofs; in the twelfth they had external roofs of wood.† The pointed arch is in use early.‡

II. The POITEVIN school has no upper aisle, nor has it any clerestory, as its tunnel-vault rests directly on the pier arches. There is usually ambulatory and chevet. The central tower has a dome beneath the octagon, often crowned, as in the Périgordian region, with a spire "en pomme de pin." The tunnels are light and have wooden roofs. The pointed arch does not appear till the twelfth century.§ There is an exuberance of sculpture, and equestrian figures appear, *e.g.* at Civray. This school was the first to carve large statues in high relief, independent of the wall behind.‖ Examples are Notre-Dame de Poitiers, Saint-Savin, Chauvigny, Chatellerault, Civray, Villesalem, Saintes, Surgères, Aulnay, Melle, Gensai, Montbron, Vieux-Parthenay, Airvault. Saint-Laurent in the Nièvre and Polignac in Auvergne are "outliers."¶

III. In the PROVENÇAL style the early church** is small and without aisles or transepts. The following vaulting system is almost invariable, both in aisled and unaisled churches: a tunnel-vault, usually pointed, and without wooden roof, over the nave; a small dome on squinches over the choir; a semidome over the apse. Later, aisled churches are more common; then transepts appear, and the eastern limb generally has three parallel apses. In the later churches the aisle generally has a demi-berceau, and the nave a clerestory; the internal elevation is one of two stories. Almost all the roofs are of solid stone. The central tower is square or octagonal, and usually contains a small dome. The towers are often simple and plain. The pointed arch appears at the very beginning of the eleventh century, if not earlier; but at first is confined to the domes and tunnels.†† The ribs of the tunnel rest on engaged pilasters; only a few late examples—*e.g.* Sisteron and Digne—have engaged columns; the same is the case with the Palestine churches. The arches have recessed square orders. We are apt to judge of Provençal sculpture by the exuberant examples at Saint-Trophime, Arles, and Saint-Gilles. But the great majority of the churches are very bare and plain. Roman monuments must still have been plentiful in Provence in the tenth and eleventh centuries; and the earliest carving, *e.g.* of the Corinthian and Composite caps, is often almost indistinguishable from Roman work of the third or fourth century.

The classical pediment and the entablature with its three members are faithfully

* Plan in Corroyer's *Architecture romane*, p. 287.

† Choisy, *Histoire*, p. 243.

‡ On the Périgordian School see Mr. Spiers's Paper, JOURNAL OF THE R.I.B.A., 20th February 1896; and Sharpe's *Domed Churches of the Charente*.

§ *Ibid.*

‖ *Histoire monumentale*, p. 122.

¶ On the Poitevin School see M. Berthelé's *Les Arts en Poitou*.

** *E.g.* Avignon, Aix, Orange, Cavaillon, Maguelone, Agde.

†† There is a curious reversion to the semicircular form in the tunnels of Sisteron, &c., late in the twelfth century.

reproduced. As time goes on, the detail becomes more and more Romanesque in character.* The internal piers often have no more than a string as a cap. The Provençals, being timid builders, often made the arches of the central tower much lower than the tunnel of the nave—*e.g.* Arles, Digne, Vaison, Sisteron, Saint-Paul-Trois-Châteaux—and corbelled in the arches of the crossing to reduce the span of the dome. The churches are very small and plain, and, with the exception of the early use of the pointed arch, had little to teach the other schools.

Examples of Provençal churches are La Chapelle de la Trinité and Saint-Honorat, Île de Lérins; Montmajour; Saint-Jacques, Béziers; Saintes-Maries; Saint-Ruf; Saint-Martin de Londres; Saint-Guilhem du Désert; Maguelone; Rieux-Mérinville; Avignon Cath.; Thor; Thoronet; Silvacanne; Vaison; Cavaillon; Saint-Trophime, Arles; Saint-Gilles; Tarascon; Saint-Paul-Trois-Châteaux.†

IV. In the Auvergne style the nave is covered with a tunnel, at first semicircular, but afterwards obtusely pointed, as at Issoire. There is an upper and a lower aisle; the latter is groined, the former has a demi-berceau. There is no clerestory. The interior is two stories high. The vault is thick, and was not intended to have a wooden roof. The east limb has ambulatory and chevet. The central tower is in two stories, rests on an oblong base, contains a dome on squinches, and is octagonal. There is often but one western tower, placed centrally in the façade. The pointed arch appears late. Patterns in coloured lava are common. Triangular arches are used decoratively, and the upper aisle may have a trefoiled arcade. Engaged columns are frequent as buttresses. The Toulouse churches are notable for the great richness and beauty of the sculpture, splendid examples of which are collected in the Toulouse museum; especially interlaced capitals, statuary, and bas-reliefs. In Auvergne the character of the building-stone probably kept the art of sculpture back. Examples are: Notre-Dame du Port (Clermont), Issoire, Saint-Nectaire, Orcival, Brioude, Le Dorat, Saint-Saturnin, Riom, Ébreuil, Chamalières, La Palisse, Roanne, Menat, Chambon, Felletin, Ussel, Mauriac, Figeac. Further to the south are Espalion, Millau, Conques, and Saint-Sernin, Toulouse.‡ "Outliers" in England are: St. John's chapel in the Tower of London, and Gloucester Choir; and in Spain, Santiago cathedral. Saint-Étienne de Nevers also is an "outlier," with a Cluniac clerestory.

V. The Burgundian Romanesque received its highest development at the hands of the monks of Cluny.§ The vault of the nave is a pointed tunnel; it is very light, and is protected by a wooden roof; the tunnel rests on a wall pierced by clerestory windows; it has no abutment in the aisles, but this wall is carried up *above* the spring of the tunnel, so that externally the windows appear to be set very low in the clerestory wall. The internal elevation is one of three stories; the triforium is often unlighted. The aisle has a groined vault; there is no upper aisle, except at Saint-Étienne de Nevers.‖ The pointed arch is used at the end of the eleventh century, not only in the tunnel, but in the aisle-vaulting. The original plan seems to have been a choir of two or three bays, and three parallel eastern apses.¶ This was replaced in most of the larger churches—*e.g.*, Cluny, La Charité, Tournus—by an ambulatory and chevet of chapels. The preference for fluted engaged pilasters is due to the influence of existing Roman monuments, *e.g.* the Porte Saint-André at Autun. The abacus is generally continued to form a string. Strings are exceptionally numerous and large, sometimes taking the form of

* Barr Ferree in the *Architectural Record*, New York, Vol. V. 3, 279.

† See Revoil's *Architecture romane du Midi de la France*; Barr Ferree in the *Architectural Record*, New York, Vols. III.–VII.; and MacGibbon's *Architecture of Provence and the Riviera*. See also the bibliography in Enlart's *L'Architecture gothique en Italie*, p. 300.

‡ Monograph in *Archives des monuments historiques de la France*. First series.

§ At the head of this Paper is a photograph of Cluny taken from the model in a glass case in the museum.

‖ But cf. Châtel-Montagne.

¶ *E.g.*, Autun cathedral, Semur, and Châteauneuf, all of which are triapsal.

strings of large roses. The design of the floriated capitals and mouldings is admirable; equally so is the execution, owing to the good quality of the stone. Because of the survival of much Roman work, classical detail is common.* Only the carving of Toulouse and Provence can vie with that of Burgundy. The towers differ from those of Auvergne in having several stages, all similar in form, and pierced on each face by two openings, rarely united beneath a single arch.† As in the Lombardic and German styles, arcades occur under the cornice of the apse, and on the flanks pilaster strips joined together by arches.

The chief examples are Cluny, of which the south arm of the central transept survives; Paray-le-Monial; Saulieu; Beaune; La Charité; Autun cathedral; Semur and Châteauneuf, both in Brionnais. Saint-Benoît-sur-Loire is an "outlier"; Tournus and Vézelay are quite exceptional.

VI. In considering Norman Romanesque it may be convenient to exclude its developments in England, which will be considered separately. In the eleventh century this was the most backward of all the Romanesque schools. No nave was vaulted, with the possible exception of the choir of Saint-Nicolas, Caen; but the trouble and expense of high vaults not being incurred, the Normans were able to build churches vast in scale. In sculpture also this was the most backward of all the Romanesque schools. Though they had the fine Caen stone, they were driven to mere geometrical ornament, such as the billet and chevron: mouldings were coarse and clumsy; and they were frequently content with plain cubical capitals.‡ They made the semicircular arch suffice, even in vaulting. The pointed arch hardly appears before 1130, and does not come into general use till much later. An upper vaulted aisle, as at Jumièges, is exceptional; but a lofty triforium, with windows in the back wall,§ is not uncommon. The aisles have at first groined and, later, ribbed vaulting. The piers often alternate, as in the Lombardic and German schools. The piers are generally compound, and have engaged columns. The internal elevation is one of three stories; there is a clerestory, and in front of it a wall passage. The characteristic form of choir is one with three parallel eastern apses, or a variant of this. There is usually a triplet of towers. The central tower is not vaulted, and is square, with windows half-way up each face. The towers were crowned with very low spires. Arcades of intersecting semicircular arches are characteristic. In the end most of the naves received vaults, quadripartite, sexpartite, or quasi-sexpartite,‖ or a diaphragmatic system of wooden roof.¶

Examples are the two abbeys and Saint-Nicolas at Caen; Saint-Georges de Boscherville; Bernay: Mont Saint-Michel; Cérisy-la-Forêt; Serquigny; Bayeux; Graville; Ouistreham; Jumièges.**

VII. The German Romanesque was developed late, but reached a higher development than any other school. At the end of the eleventh century, like the school of Normandy, it was still in a backward state. Very few of the naves had been vaulted; as in Normandy, there were no "chevet" plans; the pointed arch was not employed; the plain cubical capital prevails; mouldings are rude; there is little carving. On the other hand, such churches as Speyer, Worms, and Mainz were, as in Normandy, vast in scale. In the end, the naves received ribbed vaults. The nave, as well as the aisles, was vaulted in square compartments, one square compartment of the nave-vault corresponding to two squares of the aisle-vault.†† These vaults were domical. The piers alternate in mass according to the load they

* See Comte Robert de Lasteyrie, quoted in Enlart's *L'architecture gothique en Italie*, pp. 233, 234.
† A. Saint-Paul, *Histoire monumentale*, p. 114.
‡ And in England with mere imposts, *e.g.* in the naves of Gloucester and Tewkesbury, both of the twelfth century.
§ *E.g.* the Abbaye-aux-hommes.
‖ Abbaye-aux-dames.
¶ Choisy, *Histoire*, p. 193.
** See Ruprich-Robert, *Architecture normande*.
†† So also in the vault of Boxgrove Priory church.

have to bear, and have engaged columns. There is a clerestory, and a wooden roof over the vault. The internal elevation is one of three stories, but the triforium is often masked by a blank wall. There is usually no upper aisle. The clerestory wall has to be carried high up above the spring of the vault, because the vault is domical; it also weights the supports of the vault—*cf.* the Cluniac method of abutment. In plan the noteworthy points are: (1) the rarity of the "chevet" plan; (2) the western apse; (3) the western transept; (4) northern and southern apses of transepts. The central tower usually is vaulted with a dome on squinches, and is generally an octagon. Towers are unusually numerous, and have special forms of spires or capping. The Norman clerestory has an internal gallery, the German an external. This gallery under the eaves is often open; it serves to ventilate the timbers of the roof, as well as to decorate the unusually large amount of blank wall above the clerestory windows. The walls have often pilaster strips terminating in the arcading beneath the eaves.

Examples are: Speyer; Worms; Mainz; Trier; Brauweiler; St. Stephen's chapel, Ratisbon; St. Bartholomew's chapel, Paderborn; Corvei; Liudgerikapelle, Helmstadt; Doppelkapelle, Neuweiler—which are wholly or in part of the eleventh century: and Laach; Brauweiler; Rosheim; Saint-Martin, Worms; SS. Apostles, Cologne; Bonn minster, with work of the twelfth century. Romanesque was still being done in the thirteenth century, *e.g.* at Bamberg.*

VIII. Lombardic. The Romanesque of the north of Italy varies so much that De Dartein† confines the term "Lombardic" to the work at Milan, Pavia, and the neighbourhood, excluding the Romanesque of (1) Como, (2) Piedmont, (3) Emilia, (4) Verona. The characteristic vaulting system comprises a semidome over the apse, a dome on squinches over the crossing, a tunnel-vault over the transept; but over the nave, as it had aisles, they were afraid to put a tunnel, and constructed a ribbed vault. The dome was sometimes semicircular, usually octagonal. The compartments of the nave vault were at first square, and one compartment of the nave answers to two of the aisles, as in Germany. At S. Ambrogio, Milan, and S. Michele, Pavia, the transverse arches of the upper aisle carried walls, a kind of solid flying buttress. Later on, the Lombard plan was abandoned, the bays of the nave were narrowed, and the compartments became oblong, as at S. Pietro in ciel d' oro, Pavia, consecrated in 1136. But in the end, the Lombard builders reverted to the system of wide bays, making the nave compartments square and those of the aisles oblong, as at S. Teodoro, Pavia, 1150 to 1180, a precedent followed even in the later naves of Florence and Verona cathedrals, and S. Petronio, Bologna. The vaults and domes are very thick, as they supported directly the external covering of tiles or flagstones: as they still do in the baptistery of Alliata and at S. Thomas near Almenno.‡ The vaults and domes are not built of ashlar but of small materials, bricks or rubble. The ribs are very heavy and clumsy. The nave vault is very domical, as in Germany; the vaults of the aisles less so. Both the upper and the lower aisles are vaulted. As it was desired to have one solid roof to span both nave and aisles, an upper vaulted aisle was provided.§ This, as well as the lower aisle, is provided with windows. There is no clerestory; the nave-vault rests on the open arches of the upper aisle. The internal elevation is of two stories. These arrangements resemble those of such an Auvergne church as Issoire, except that in the Auvergne church the opening into the

* Dehio, *op. cit.*, i. 510-516.

† *Étude sur l'architecture Lombarde.* See critique in Cattaneo's *Architecture in Italy.* Also Mothes's *Die Baukunst des Mittelalters in Italien*, and Cordero's *Dell' italiana Architettura durante la dominazione longobardica.*

‡ De Dartein, p. 466.

§ But the upper aisle may be omitted—*e.g.* in the ancient church of SS. Pietro e Paulo, Bologna, and at Pavia in S. Pietro in ciel d' oro and S. Teodoro.

upper aisle is subdivided. As there was one span roof for aisles and nave, it follows that the aisles do not appear in the characteristic Lombardic façade. The arches are semicircular, the piers compound, with engaged columns and pilasters built independently of the internal pier. In the ninth- or tenth-century church of S. Stephen, Verona,* there is a curious sunk ambulatory without chapels; and another very rudimentary and early ambulatory at S. Sofia, Padua, with a small semicircular eastern chapel†; otherwise the ambulatory and "chevet" plan is absent. The favourite plan is that with three eastern apses – *e.g.* S. Ambrogio, Milan; Alliata; S. Teodoro and S. Giovanni in Borgo, Pavia. S. Michele, Pavia, has a single eastern apse. S. Ambrogio is exceptional in not having a transept. Campaniles have no fixed position, and never form part of the body of the church. Owing to the great weight of the vault, the buttresses are given considerable projection. The arches, like the piers, are compound, with recessed orders. The cubical cap is common, and windows with double splay. Stone was scarce and dear, and the mortar was of inferior quality. Blocks of any size were used together, so that level coursing is the exception; sandstone, granite, marble and limestone, flagstones and vast erratics,‡ were mixed up together. Except in the apse and façade, brick was the chief material; the bricks were often not made to size. The voussoirs of the arches are of all sorts of sizes, and often not extradossed. The abacus and cap are often cut from the same block. Of all the Romanesque masonry the Lombardic is the worst. Good masonry does not prevail in Lombardy till well on in the twelfth century.§

As regards the above classification, one word of caution is necessary. When I speak, *e.g.*, of the style or school of Auvergne, I do not mean either that all the churches in Auvergne are built in this style, or that there are no such churches outside Auvergne, but merely that such churches are more common in Auvergne than elsewhere, and may therefore, for convenience, be described as belonging to the style or school of Auvergne. Also it must be noted that the characteristics of each style given above are not universal; numerous exceptions occur. They are merely the features which occur more usually.

One is tempted to try to work out the relations to one another of the different schools. Certain resemblances are patent. The superposed aisles link the style of Lombardy to that of Auvergne; German Romanesque is connected with Lombardic on the one hand, and with Norman on the other. But a much more exhaustive classification is necessary before any results of lasting value are likely to be obtained.

Still stronger is the temptation to inquire into the origins of all the Romanesque styles; whether they are derivatives, as some have held, from Provence, or, as others have held, from Lombardy. Such architectural pedigrees are, however, as a rule, about as trustworthy as a family tree. And there always remains an alternative hypothesis, which seems to have within it much of truth—viz. that the styles were none of them mainly derivative, but that the same problem was engaging all the different regions more or less simultaneously; that the builders of each region were solving it, with some little light indeed from their neighbours, but mainly independently, by empirical experiments of their own, aided by the survival here and there of traditions of Roman construction, and by the study of local Roman monuments, then no doubt far more abundant in each locality than they are now. Does not Bede say that in the north of England, the most savage part of England and the remotest outpost of Roman civilisation, there were still remaining in his time, the beginning of the eighth century, "cities, towers, bridges, and paved roads of the

* Cattaneo, *Architecture in Italy*, Fig. 136.
† Dehio, *op. cit.*, Plate 156.
‡ *E.g.* at S. Abbondio, Como.
§ Ruprich-Robert, *Architecture normande*, pp. 109, 110.

Romans"? Far greater still was the wealth of Roman work in such districts as Provence and Burgundy.

Another caution requisite is that the classification does not cover the whole ground. This is necessarily so. Between each region and the next there was always a debatable ground, where two or more styles would be in simultaneous use. Indeed a "pure" region would be the exception; the greater part of the area of any one country would employ mixtures of style. I may instance England.

ENGLISH ROMANESQUE.

So far as I know, it has always been customary to regard the Romanesque of England and Normandy as one. To me the Romanesque of Normandy seems to be a "pure" style, but that of England a "mixed" style. The points of resemblance of course, are exceedingly numerous and close; but there are also points of difference, which it is difficult to explain as derivative from Normandy. Most important is the planning. Now in Normandy the main characteristic of the plan is the absence of the ambulatory and "chevet," and the preference for three parallel eastern apses. But in England we have or had ambulatory and "chevet" at Canterbury, Norwich, Lewes, Bury, Gloucester, Tewkesbury, Leominster, and elsewhere. This plan cannot have come from Normandy. As a matter of history, all our Romanesque builders were not Normans, nor did they always copy Norman churches. Two bishops, at Norwich and Hereford, were Lorrainers; therefore they knew something of Burgundian Romanesque. The Hereford bishop is distinctly described as having copied Aix-la-Chapelle; 'Aquensem basilicam imitatus." Where, then, did our "chevets" come from?

We have seen that the "chevet" regions are those of the Romanesque of Poitou, Auvergne, and Burgundy. It cannot have been a "home" development, for it appears full-blown. The question is, From which of the above three districts did we borrow? Look at our tower systems. By far the most common disposition in England, as in Normandy, is the triplet. But Ely and Hereford, and perhaps Winchester and Wymondham, had in addition to the central tower only one western tower, which was placed in the centre of the western façade. Now this is just a characteristic arrangement of the towers of Auvergne. Or take the test of superposed vaulted aisles. These occur in Gloucester choir and in St. John's chapel in the Tower of London; and in both the vault is not the groined vault of the upper aisles of Normandy or Lombardy, but the characteristic demi-berceau of the upper aisles of Auvergne. In addition, the nave of the little chapel in the Tower has what is very rare in England, a semicircular tunnel-vault.* Turning back to Gloucester, we find the Chapter House vaulted with what is another rarity in England, a pointed tunnel. And this tunnel is not of the graceful Gothic form, but just the ugly curve, stilted at its base, which is assumed by the tunnel-vaults of Burgundy and Auvergne. Again, the naves of Gloucester; Tewkesbury; Malvern; Colchester; Carlisle; Southwell; St. Bartholomew's, Smithfield, and others have cylinders and not compound piers. But in Normandy the compound pier seems to be universal, at any rate in the eleventh century, in all the larger churches. Again, the capitals of the Gloucester and Tewkesbury piers are mere imposts. Now all three characteristics—the cylindrical form of the pier, its brobdingnagian dimensions, and the impost—all occur in the piers of the great eleventh-century church of Tournus.† These data, individually perhaps of small importance, still go to increase the cumulative value of the evidence for the existence of a non-Norman influence

* Clark, *Mediæval Military Architecture*, ii. 215.

† Gloucester also has apses polygonal externally, circular within. So also at Brioude, Conques, and St. Aignan.

in our English Romanesque. It is to be regarded as a mixed style; and while by far the most important factor is the influence of such pre-Conquest churches as Bernay, Jumièges, and the Abbaye-aux-hommes, we must also attribute some degree of importance, at any rate in the planning, to the highly developed Romanesque of Auvergne and Burgundy.*

* One more parallel may be added. Nothing differentiates English Romanesque more from all the Romanesque of the Continent, even from that of Normandy, than the enormous length of such naves as Peterborough, Ely, Winchester, Norwich, St. Albans, and Bury St. Edmund's. Now in the borderland between Burgundy and Auvergne there was built by the Cluniacs the vast church of La Charité-sur-Loire (consecrated 1107). Before the east limb was changed to "chevet" form, it was a veritable English Romanesque minster in form. Instead of the characteristic Cluniac narthex, such as that of Cluny, Vézelay, and Souvigny, the nave was given exceptional length: it had no fewer than eleven bays, including one between the western towers. And as it had originally three parallel eastern apses, the resemblance to the plan of Ely or St. Albans was exceedingly close. It is possible, then, that in the influence of the Cluniac plan with long narthex, and especially in the modification of it seen at La Charité, we have the precedent for the enormous length of many of our English Romanesque naves.

DISCUSSION OF MR. FRANCIS BOND'S PAPER.

Mr. Edward A. Gruning, *Vice-President*, in the Chair.

Colonel LENOX PRENDERGAST [*H.A.*] said it had been suggested to him to open the discussion by proposing a vote of thanks to Mr. Bond for the very important Paper he had delivered to them. Probably he (the speaker) knew less of the technical points brought before them than anybody else present, but it was perhaps as well that an outsider should take special note in that room that so strictly technical a Paper was welcome to them all. As to the historical part of the subject, that, of course, was too vast a matter to be got into the Paper, but it so happened that he (the speaker) had made some recent researches as to buildings dating within a century or two of those brought before them by Mr. Bond. One wanted to find out if possible by what process this form of architecture prevailed almost everywhere, reaching even to our own island. Anybody who cared about archæology would know that the Venerable Bede up in the North wrote clearly of buildings that were rising in the eighth and ninth centuries, which were being built here after he had made his visits to Rome, and which he described as being designed "more Romano." Being desirous of tracing where the old Roman methods ended, and where what followed took their place, he (the speaker) made a journey specially to Le Puy, as the late Mr. James Fergusson, then a member of their Council, had mentioned that there he thought perhaps the missing link would be found. In the result, he was unable to follow that clue. Later on, that most valuable work, *L'Architecture de Syrie centrale*, the joint production of the Comte de Vogüé and the late French Ambassador in London, M. Waddington, gave certainly a better clue. There it was possible to make out what the processes were, and it was well worth their while to study them. One advantage of the Paper having been kept to the one phase, namely that of the Romanesque, was that they were kept clear of the perpetual controversy which arose whenever architecture was touched upon, as to one school against another; but there was no kind of doubt as to the complete and absolute ignorance of the general public about this particular style of architecture. They decided everything by ornamental detail; they thought of nothing but the ornamentation. As to the constructional phase, it would be Greek to them. This should no longer be the case. These magnificent churches had their effect, however: one never met anybody who had been at Durham or in any of the great English churches of that period that did not come away saying, "There is something about this style that it is impossible to describe." So with the Abbaye-aux-hommes and the Abbaye-aux-dames: everybody who travelled was impressed by them, and surely it was worth their while to take some little trouble to learn how their architecture had come about. He confessed that he for one was extremely grateful to the distinguished member who had given them this Paper, for it really was a revelation to him. He could not conclude without congratulating the meeting also on having had the illustrations put before them in so tangible and attractive a form. Lantern displays were often very tiresome exhibitions: but that evening's display had gone off like clockwork, and he congratulated Mr. Bond upon that also.

Mr. R. PHENÈ SPIERS [*F.*], F.S.A., said it would be impossible to attempt now to follow Mr. Bond in the arguments he had laid down, arguments which must have taken an immense amount of time to bring together. At one time or another he (Mr. Spiers) had visited very nearly all the buildings Mr. Bond had referred to, and

he had only one regret, viz. that he had not had Mr. Bond's Paper with him when he was going through them. At the same time, it happened that he had been particularly interested in the various methods of construction in vaults and half-vaults he had seen in those churches, and therefore he had been able to follow Mr. Bond's descriptions. As to the classification, he might do a greater service to the Institute and to Mr. Bond if he were to limit himself to noting a few additional examples which would be interesting to take up, for he hoped this was only the starting-point of this subject. Mr. Bond had given them only what could be gone through in the time, viz. the skeleton of a theory upon which many volumes could be written. He hoped Mr. Bond would continue the subject, because he was quite certain of the correctness of the principle on which he had started, viz. the solution of the problem how to vault a basilica. That was a subject which would be of the greatest possible value and interest to all their students. In view, therefore, of the Paper being extended, he ventured to mention one or two buildings, some of earlier date than those referred to in the Paper, and others later. Mr. Bond had been perhaps too timid with regard to the dates, and when, during the reading of the Paper, Colonel Prendergast asked the date of St. Etienne, Périgueux, he simply contented himself with saying that the church was dedicated in 1047. As a matter of fact, there was another earlier church in the vicinity of Périgueux, St. Astier, the date of which was known to be 1010 A.D. St. Astier was the first church he knew of covered with dome and pendentives. The dome and pendentives had gone, but the piers which sustained them were still there. St. Etienne, which was consecrated at the same time as the Basilican church of Saint-Front—viz. in 1047—consisted at that time of certainly two, if not three, domed compartments, and the earliest of these, of which only the east end now remained, was built between 1014 and 1020. It was rather singular that both in this church and in St. Astier—and, it might be, in other examples—instead of beginning, as he believed had always been the custom, with the choir, they seemed to have begun at the opposite end, and it was the east end which was the latest. In another example, Angoulême, which Mr. Bond had mentioned, the western dome dated from an early period—1117 to 1120. That probably was the first portion erected, and then the church was added to. As regards the church of Saint-Front, Mr. Bond had taken the date which he (Mr. Spiers) had attempted to prove, and which had been followed by other authorities, of whom M. Brutails went further, and told them that the bodies of the saints, the bishops, were not brought back to the new church until 1175, so that probably the church was begun much later than 1120. Of that he had additional proof to suggest. When the Basilican church of Saint-Front was burnt down their first idea seemed to be to copy St. Etienne, because in the middle of the nave of the Basilican church there are now four great piers, which were intended to support a dome. He imagined that while they were about it they thought they might build a finer church; and some of the brethren, having seen St. Mark's, conceived the idea of reproducing the magnificent building, as they saw it before the restoration, with the five domes. The problem of Saint-Hilaire, one of the most wonderful interiors he knew, might be solved in this way. As far as he could make out from Saint-Hilaire, portions of it, such as the transept and aisles, were earlier than the nave; and the problem they seemed to have worked out was this: that they wanted to vault over the nave of the church. But Saint-Hilaire was fifty feet wide—a span they would not dare to attempt at that time. So what they did was to build within the existing nave piers of coupled columns in front of the piers of the existing aisles, to raise arches on those, and to divide them so as to form a square in the middle, which they covered with a dome on squinches. The church, which unfortunately was not illustrated, was of the greatest interest: the beauty of its interior and its suggestions for modern church purposes were very valuable. The next point was as to the circular barrel-vault or the pointed barrel-vault. Although the late Mr. Fergusson was not a practising architect, it was astonishing how very closely he arrived at real practical results in his theories; certainly his ideas seemed valid when he pointed out that the object of the pointed barrel vault was to have less filling-in at the top, because it was the custom to cover over these barrel-vaulted churches direct with tile roofs, with no timber at all. With a pointed arch they came very nearly to the line of a tile roof of a fair pitch; and his idea that that was the reason which led to it seemed a valid one, and would account for such having actually existed before the circular barrel-vault. As regards the church of Tournus, which seemed to him a marvellous building, he could not understand why it had not been reproduced. Mr. Fergusson seemed to fancy that the series of arches thrown across rather interfered with the light. When he saw the church he thought they looked extremely beautiful, and the light got, in consequence of the wall being entirely a plain one, which could be pierced with any number of windows, was splendid. Mr. Bond mentioned, in a note on the question of the date, that the consecration took place in 1019. The church was begun in 1007, after the fire, and was consecrated in 1019. The choir, as Mr. Bond said, was of the twelfth century, but the crypt was the crypt of the old church, dating before the year 1000 A.D. It still existed underneath, and it

was extremely interesting to see on the vault the imprint of the wooden planks which formed the skeleton centering on which the concrete vault was formed. Mr. Bond had shown one case, the church of Hauterive, in which the expedient was adopted of running transverse vaults across the aisles, the thrust of which resisted one another. The Basilican church of Saint-Front had precisely the same system, and the earliest vaulting of Saint-Remi, Reims, was another well-known example. As regards the church of Granson in Switzerland, generally put down as eleventh-century, he was under the impression that Mr. Street in his description said it was early twelfth. Coming to the tests of the plans, there were one or two instances. There was a small church in Switzerland, Saint-Sulpice, certainly very early indeed, in which there were three apses. There were two interesting early eleventh-century churches not far from one another—Vignory and Montierender. There had been some change as regards the east end of the choir of Vignory, and it had been vaulted about 1020 to 1030; if so, that would be one of the earliest instances of vaulting round an apse. The plan of the two bays now embedded in the tower of Saint-Front, Périgueux, was, according to M. Lambert, precisely the same as those of Vignory. There were three interesting churches at Reichenau he should like to refer to—viz. those of Mittelzell, Oberzell, and Unterzell, dating from the ninth to the eleventh centuries. He might also mention, as well as Autun, the church of Langres, which was not far off, and which was subjected to the same Roman influence as Mr. Bond had mentioned—that is to say, the flutings of the piers. There was an ancient Roman gateway at Langres, which no doubt gave the masons the idea of fluting all their columns, just as they saw at Autun, where there were two Roman gateways. That concluded the notes he had made on running through the Paper, which had been one of the greatest possible interest. He hoped Mr. Bond would not drop the subject. The inquiry was one which would give additional interest to every student going abroad, and would enable them to search out more for themselves. Looking at the Paper broadly, he thought Mr. Bond was on the right tack, and he had not been able to find anything he could greatly dispute. There was always this element to lay stress on—that master-masons from the Cluniac monasteries might have been brought from one part of the country to another, and in that way introduced changes not belonging to the exact province in which the building was done. He had much pleasure in seconding the vote of thanks to Mr. Bond for the enormous research he had undertaken, and for the admirable way he had illustrated it.

THE CHAIRMAN having put the vote of thanks, Mr. Bond briefly responded.

9, CONDUIT STREET, LONDON, W., 27*th April* 1901.

CHRONICLE.

Suspension of By-law 26.

The first business on the agenda at the Special General Meeting on the 15th inst. was to consider a recommendation of the Council that Mr. Wm. Emerson, who has filled the office of President for the two years prescribed by the By-laws, be requested to submit himself for election as President for the ensuing year of office, and that consequently By-law 26 be suspended, as allowed by Section 33 of the Charter.

The CHAIRMAN (MR. EDW. A. GRUNING, *Vice-President*), in moving the adoption of the recommendation, reminded the Meeting that it had been customary in recent years to ask Presidents to serve a third year, and that, with a single exception, the procedure now recommended by the Council had been followed ever since the present Charter and By-laws had come into operation. Mr. Emerson, he continued, had been an admirable President, and they could pay him no greater compliment than to ask him to serve for another year.

MR. ALEX. GRAHAM, F.S.A., *Hon. Secretary*, seconded the motion.

MR. LACY W. RIDGE [*F.*] said he felt it to be his duty to oppose the motion. It was laid down by their constitution that the President should be elected for two years, and that he should not be eligible to serve again until the expiration of two years from the termination of his tenure of office. He was aware that the regulation had been departed from in former cases, and on one occasion he had raised his voice in protest against it. He wished again on the present occasion to urge the Institute to resume its proper position and to carry out the constitution laid down in the By-laws. He remembered all the Presidents of the Institute since they had given up having a sort of patronage President in the case of Earl de Grey, but he did not remember any one man of such distinction as to render the office incapable of being filled by any reasonably efficient practising architect. As he intended to oppose this motion he had written to Mr. Emerson that there was nothing personal to him in his opposition; and he wished to assure the Meeting that he had not the slightest objection to Mr. Emerson. As a matter of fact, everyone, outside those who served on the Council, was aware that the great defect of the Institute was its not being sufficiently in touch with the profession. But how could it be in touch with the profession when the same men were nominated to office over and over again, and when men outside were not called upon to take their share of duty? This state of things went on year after year, and would continue to go on if the Council were to be allowed to bring about the suspension of a by-law merely to get themselves out of some

little personal difficulty. It was a poor line for the Council to take, and it was a line he should ask the General Body to deliver them from. There were many men who had served the office of Vice-President, and surely those men were fit to proceed to the Chair. He failed to see that there was the slightest necessity for this departure from the by-law, and if the Meeting agreed to the recommendation he should oppose it when the resolution was brought forward for confirmation.

Mr. HENRY DAWSON [*F.*] considered that no sufficient reason had been given for the course recommended. After a by-law had been made and sanctioned by the Privy Council, and become part of the constitution of the Institute, that the Council should make a practice of annulling the by-law, by asking every succeeding President to go on for a third year, was a course of action that would be condemned by all business men, and he hoped members would not support it.

Mr. A. FRAMPTON [*A.*] thought it the duty of the Institute to endeavour to the utmost of its ability to act in order. Their By-laws provided that the President should hold office for two years, and the recommendation that he should have an opportunity of serving for three was brought before them not by the united members of the Institute but by the Council only. Thus it was not a representative recommendation. He personally did not know Mr. William Emerson, and therefore in his case it was not a matter of personal feeling when he said that at the present juncture it was very desirable that they should have a new President. He had one great reason for so expressing himself—and his opinion was held by many members of the Institute and also by the profession generally—viz. that the present President of the Institute was serving on the Committee of the Queen Victoria Memorial. Acting in that capacity Mr. Emerson had been the means of, or had been a party to, the selection of certain architects to compete for that memorial. He contended that the first duty of a President of such an Institute as theirs was to represent their interests, and their interests only.

The CHAIRMAN remarked that they had no reason to suppose that Mr. Emerson concurred in the decision come to by the Memorial Committee.

Mr. FRAMPTON, continuing, said that that could be expressed afterwards, but the President was identified with that Committee, and it would show the feeling of the Institute about the matter if they declined to have the by-law suspended, and insisted on a change of President on this occasion. Therefore, as Mr. William Emerson was connected with the Memorial Committee, he should support Mr. Ridge's protest and urge that the by-law be not suspended.

After some discussion as to the precedents which existed for the Council's action, the CHAIRMAN said that, no amendment being proposed, he would put the matter to the vote, reminding the meeting that under Section 28 of the Charter, as the question related to the suspension of a by-law, Fellows only were entitled to vote upon it.

Mr. RIDGE said, as that was the case, he would move an amendment—"That it is undesirable that the office of President should be held for three years in succession in contravention of the by-law." If he moved that it would be an academic expression of opinion on which the Associates had a right to vote.

The CHAIRMAN held that the vote on that point could not be taken until the original motion had been dealt with; therefore he could not put it as an amendment.

A vote of the Fellows by a show of hands for and against the motion was then taken, and the numbers found to be as follows: For the motion, 36; Against, 12. The requirements of By-law 62 having thus been met, viz. that the majority must consist of "at least two-thirds of those present having a right to vote and voting," the Resolution was declared carried.

Mr. RIDGE said that the resolution would have to be brought forward at a subsequent meeting for confirmation, when he should oppose it again. Meanwhile he would move the following Resolution: "That it is undesirable that the By-laws should be suspended with the object of enlarging the tenure of the office of the President beyond the period laid down in the By-laws."

Mr. HENRY DAWSON [*F.*] seconded.

Mr. JOHN SLATER [*F.*] said he did not think Mr. Ridge could bring forward his motion on that occasion, when they had assembled for special business. A Resolution of that kind could not be brought forward unless the necessary notice was given.

Mr. RIDGE having asked for the ruling of the Chair on the point, the CHAIRMAN referred him to By-law 60, which provides: "The Council may at any time call a Special General Meeting for a specific purpose, and they shall at any time during the Session be bound to do so on the written requisition of twelve subscribing members, of whom the majority shall be Fellows, which shall specify the nature of the business to be transacted; and no other business shall be discussed at such meeting."

After some further discussion, it being pointed out that, under By-law 56, fourteen days' notice must be given of any motion intended to be submitted, Mr. RIDGE said that as that would carry them over the date on which the confirmation of the Resolution was to take place, he would withdraw his opposition to the suspension of the by-law for this occasion only. He would, however, at once give notice that at the first opportunity—either that day fortnight or whenever it was convenient—he would move a Resolution, of the abstract character he had indicated, that the thing in future should not be done. If the whole matter could be settled in that way he should consider that he had done an extremely good thing for the Institute.

A Special General Meeting, summoned by the Council in accordance with the Charter for the purpose of submitting for confirmation the resolution suspending By-law 26, was held pursuant to notice on the 22nd inst., when the resolution was duly confirmed.

The Institute Form of Building Contract.

The next business on the agenda at the Meeting of the 15th inst. was for the Meeting to give its sanction to the alterations in the Institute Form of Contract proposed by the Council on the basis of the amendments adopted at the meeting of the 1st inst. The amended clauses are printed in the last number of the JOURNAL [*ante*, p. 260], and the further variations agreed to are sufficiently indicated in the report of the discussion at the meeting of the 1st inst. [*ante*, p. 263].

The CHAIRMAN said that, the amended clauses having been considered and passed *seriatim* at the last meeting, he would now move their adoption *en bloc*, and that they be substituted for the clauses similarly numbered in the Contract Form in use since 1895.

The motion having been seconded by the Hon. Secretary, the Chairman, in reply to Mr. Henry Dawson [*F.*], stated that it was open to anyone to propose any further amendment.

Mr. HENRY DAWSON said he wished to propose the insertion of a few words in Clause 12. The clause as printed read as follows: "12.—The Contractor shall, when authorised by the architect, or as provided by Clause 5, vary by way of extra or omission from the

Drawings or Specification; such authorisation is to be sufficiently proved by any writing or drawing given by the Architect, or by any subsequent written approval by him. No claim for an extra shall be allowed unless it shall have been executed under the provisions of Clause 5, or by the authority of the Architect as herein mentioned. Any such extra is hereinafter referred to as an authorised extra."

The CHAIRMAN, interrupting, said he had forgotten to mention that they proposed to add after the words "approval by him" the following words: "but he shall make no variation without such authorisation."

Mr. DAWSON stated that the addition of those words would meet his objection on that part of the clause; but with regard to the passage, "such authorisation is to be sufficiently proved by any writing or drawing by the architect," he suggested that that was not explicit enough—that it ought to read, "signed and given by the architect."

Mr. SLATER having suggested that the word "signed" instead of "given" would meet the case, Mr. DAWSON acquiesced, and the amendment, having been put to the Meeting, was carried.

Mr. DAWSON, continuing, said the omission in Clause 17 of the words "or other person" was a very good amendment; but in Clause 20 they were repeating the same words: "All specialists, merchants, tradesmen or others, executing any work, or supplying any goods for which prime cost prices or provisional sums are included in the specification, who may at any time be nominated, selected, or approved by the architect, are hereby declared to be sub-contractors employed by the contractor." There were a great many gentlemen in different crafts connected with the profession who, he knew positively, would most distinctly object to be sub-contractors to the contractor. Therefore he suggested there should be inserted in the fourth line the words: "who may at any time be nominated, selected, or approved by the architect as sub-contractors." The clause would then be consistent, and if the architect proposed a sub-contractor, he would have to enter into the bargain referred to farther on in the clause. The difficulty was not an imaginary one by any means. He could mention at once three or four firms who would refuse to be in any way subject to the building contractor. They would, therefore, be employed by the owner.

The CHAIRMAN explained that the reason for altering it was that it made the contractor liable for all accidents to everybody who might be on the premises, and made him provide scaffolding for everybody without knowing to what extent he had to provide it. He was only bound to provide for those who were nominated as sub-contractors by the architect under the terms of his contract, while at the same time he was to afford facilities for the execution of work by others who were not sub-contractors.

Mr. DAWSON said they would find presently, under a subsequent clause, that the contractor did not afford facilities. He quite saw the motive of the change, but the difficulty could be got over by stating that the architect meant that the persons he nominated were to be sub-contractors.

Mr. SLATER said that it seemed to him that Mr. Dawson had himself indicated how the difficulty could be removed. If he put into any clause specifying £200 for plumbing work, or £500 for anything else, that the employer was to be at liberty to take it out of the contract, undoubtedly that prevented the man from being a sub-contractor *ipso facto*. If that were put in, the people they were alluding to would not be sub-contractors. The clause was only intended to apply to the people whom they did not take the option of excluding from special things, and it would not in the least affect the case which Mr. Dawson had himself given of putting those people in and saying that the employer was to be allowed to take them out and pay them himself. If he did that it avoided all the difficulty, and there was no reason why the words should not remain

Mr. EDWARD MONSON [*F.*] thought that this clause would give architects a very great deal of trouble, and that it would be best to strike it out altogether.

After some further discussion, in which Messrs. Monson, Dawson, Saxon Snell, Slater, and the Chairman took part, Mr. Dawson withdrew his amendment, the Chairman stating that the remedy for any such objection lay in members' own hands, as they could alter the contract to meet their own views.

Passing to Clause 21, which states that "any claim made under the Workmen's Compensation Act 1897, or any amendment thereof, by any person in the employ of the contractor," Mr. DAWSON suggested that the words "or of an approved sub-contractor" should be added.

The CHAIRMAN pointed out that there were several cases in which it had been held that all the workmen employed by sub-contractors were in the employ of the contractor, and therefore the addition of the words proposed would be superfluous.

Mr. DAWSON went on to Clause 29, commenting upon the omission of all reference to the scaffolding and the plant. If they put into the contract that the contractor should permit the execution of certain work, surely they ought to put in that he was to permit the erection of the scaffolding or plant required for such work.

The CHAIRMAN said that the matter had been discussed very carefully, and the conclusion come to that they could not put in a contract that a man was to provide unlimited scaffolding for work of which he knew nothing. Therefore they left it to be inserted as an item in the specification, where it ought to be, and not in the contract.

Mr. A. N. BROMLEY [*F.*] (Nottingham), referring to the arbitration clause, said he had no doubt it was the best that could possibly be drawn, but for very small contracts, if this clause were adopted, there was nothing to prevent the cost of the arbitration coming to very nearly as much as the contract. Would it not be possible to draw up a clause, independently of the one before them, for use in small contracts, whereby the arbitration costs could be limited? If the Institute did not do it the different Societies—at least, theirs in Nottingham—would certainly have to draw up one to prevent the large cost of arbitrations. There was nothing to prevent a builder, for instance, if an important point arose and his Association backed him up, introducing into the case expensive counsel and expert witnesses, and in a small contract the result was almost ruinous to a small builder or to a proprietor of limited means. He hoped the Institute would consider it, and draw up an alternative clause for the benefit of those who had to carry out small contracts.

The CHAIRMAN said he could not see how it was possible to limit the expense of legal proceedings in arbitrations. Could they insert a clause to say that the cost of any arbitration was not to exceed £20?

Mr. BROMLEY: No; but it might be provided that the architect and builder should first of all lay the facts before the referee; then the referee should appoint a hearing and let them know what evidence he would require. His experience was that the referee paid little regard to counsel or expert witnesses. He got his information privately and formed his judgment independently. In the case of small contracts, where a man builds a house for a thousand pounds, having to borrow perhaps half of it, an arbitration on any point might cost more than his £500. He could give two instances within a fortnight where the united claims were £500 and the costs mounted up to £1,000.

Mr. DAWSON observed that architects in the country, in making their contracts, could easily prepare an arbitration clause to prevent such expense as that referred to.

Mr. Bromley said they were anxious to follow as much as possible the Institute Contract, and the Builders' Association at Nottingham looked to the architects there to adopt this contract when it was settled. For that reason he suggested that a supplementary clause should be drawn to meet the cases he had indicated.

The Chairman said that the great trouble in these cases was in the selection of the arbitrator. An arbitrator could suggest at the first hearing that he only desired absolutely necessary witnesses and would not require counsel.

Mr. Bromley: Under this clause he would be forced to have counsel and expert witnesses.

The Chairman stated that he had a fairly large practice as an arbitrator, and that he could and did stop it. They would, however, be glad to consider a proposal for a special clause if the Nottingham Society had any suggestion to offer.

Mr. Slater pointed out that, even with this clause in the contract, it was perfectly competent for the architect and builder to agree beforehand that in case of dispute there should be only certain evidence and no counsel. In a 500*l.* contract, for instance, there was nothing to prevent the architect and builder agreeing that they would not bring in counsel, and would not bring forward more than one or two witnesses.

Mr. Lewis Solomon [*F.*] said that in Clause 13, which provided that "The variations shall be valued at the rates contained in the contractor's original estimate, or, where the same may not apply, at rates proportionate to the prices therein contained," he should like to have inserted something to this effect: "Where an evident error is made in the priced quantities, that shall not be binding on the Employer or Builder." Mr. Solomon proceeded to give instances where evident errors, greatly to the client's disadvantage, had been made in the priced quantities, and yet the client had been called upon to pay the charges.

The Chairman thought that in a general contract it was not possible to provide for *minutiæ* of that kind.

The motion, "That the Paper as amended, subject to the small verbal alteration indicated, be adopted as the Form of Contract of the Institute," was then put to the meeting, and declared duly carried.

The Queen Victoria Memorial.

At the conclusion of the business for which the Special General Meeting of the 15th inst. was held, Mr. Wm. Woodward asked leave to call attention to the proposal recently made public for procuring designs for the Queen Victoria Memorial, and, if he was in order, to move a resolution on the subject. The Chairman stated that the Meeting having been summoned for special purposes, it was not competent for a member to bring forward a resolution on a subject foreign to those purposes, but there was no objection to Mr. Woodward making any observations on the matter he referred to. Mr. Woodward said he would only call attention to the general subject, and, by the Chairman's permission, read the resolutions without moving them. He would then take the earliest opportunity of requisitioning the Council in due form to call a Special General Meeting for the purpose of considering his resolutions and voting upon them. Mr. Woodward then briefly sketched the history of the scheme down to the selection of the five architects charged to submit rival plans, and concluded by reading his resolutions.

Since the meeting a requisition for a Special General Meeting to consider the resolutions has been received by the Council, signed by the following members:—Wm. Woodward [*A.*], Sidney R. J. Smith [*F.*], Zeph. King [*F.*], R. Falconer MacDonald [*F.*], Edmund W. Wimperis [*A.*], Arthur G. Morrice [*A.*], W. Hilton Nash [*F.*], Edw. Monson [*F.*], Alfred Frampton [*A.*], George Judge [*F.*], Henry T. Hare [*F.*], Harold R. Luck [*A.*], R. Stephen Ayling [*F.*], J. Douglass Mathews [*F.*].

The Council have summoned a meeting for Monday, the 29th inst., as already intimated in the notice issued to members last Monday, where Mr. Woodward's resolutions are set out at length.

Special Election to Fellowship.

The Council at their meeting on the 22nd inst. elected the following gentleman to the Fellowship of the Royal Institute in accordance with the unanimous recommendation of the Council of the Sheffield Society of Architects—viz.:—

W. J. Hale, of 13, St. James' Row, Sheffield.

The April Statutory Examinations.

Examinations of candidates desirous of qualifying for the office of District Surveyor under the London County Council, or of Building Surveyor under Local Authorities, were held by the Institute, pursuant to statute, on the 18th and 19th inst.

Three candidates attended the Examination for the office of District Surveyor in London, and two passed, viz.:—

Sidney Joseph Halse, of 4, Hestercombe Avenue, Fulham, S.W.

Frank Sizer Capon, of 6, Northanger Road, Streatham Common, S.W.

Three candidates attended the Examination for the office of Building Surveyor under Local Authorities, and one passed, viz.:—

James Edwin Webb, of 27, Balfour Road, Nottingham.

The successful candidates have been granted by the Council of the Institute certificates of competency to hold the respective offices.

Obituary.—We regret to announce the death of Mr. John James Thomson, who was elected *Associate* of the Institute in 1864, *Fellow* in 1898, and was recently transferred to the class of *Retired Fellows*. Mr. Thomson held for many years the office of Superintending Surveyor to the Board of Agriculture.

Photochrom Co. Ltd., Photo. WORCESTER CATHEDRAL, FROM THE NORTH.

REVIEWS.

WORCESTER CATHEDRAL.

The Cathedral Church of Worcester. By Edward F. Strange. Bell's Cathedral Series. 8o. Lond. 1900. *Price* 1s. 6d. [*Messrs. George Bell & Sons, York Street, Covent Garden.*]

These handy little volumes purport to give "a critical and descriptive survey of the building in all its detail." In the General Introduction it is promised that the volumes shall contain—among other illustrations—"reproductions from old and in some cases rare prints." The fulfilment of this promise must strongly commend the books, for it is highly interesting to see the previous states of the building we are for the moment considering, especially when that building is one so exceptionally liable to vicissitudes as is a cathedral church. As examples I may mention, in the Salisbury volume, the view of the Close before Wyatt pulled down the campanile, and, in the Hereford volume, the view of the Nave in ruins. The Worcester volume contains six good views showing that which no longer exists. The "View of Worcester in 1778" must have been taken from the site of the present bridge. It shows a slip where there is now a high quay wall, and volumes of smoke issuing from the kiln where Dr. Wall's immediate successor * was firing his matchless scale blue. Paul Sandby, R.A., the artist, has very accurately depicted the bend of the river and the relative position of the church; we may, therefore, well credit him with equal faithfulness in his drawing of the building, even down to the mutilated pinnacle at the west end. The favourite point of view now is from the opposite bank of the Severn, but in 1798, as we see from a reproduction of the water-colour by J. Powell, it had additional charms in the shape of a picturesque group of buildings crowning the walled bank of the river. These buildings were the eighteenth-century survivals of those which "Magister Capellæ hath," as Dr. Hopkins (Prebendary 1675–1700) tells us in his note-book of extracts made from the Cathedral archives, and usefully quoted by Mr. Strange in the volume before us. Two small boys are seen fishing at the mouth of the sewer of the monastic necessarium, and their successors do the same to this day a little higher up, where the "Faithful City" discharges its sewage into the long-suffering Severn. Under Magister Capellæ's capacious residence exists still a stretch seventy feet long of Norman rib-vaulting, extending up to the site of the

* Dr. Wall died in 1776.

dormitory. No one can go round the west end of the Cathedral down to the ferry gate-house, which still preserves the fifteenth-century vault and gateway of the ancient water-gate, without wishing to know something about the considerable remains at this spot. Mr. Strange contents himself with a reference to Professor Willis's admirable account of the monastic buildings; but the *Archæological Journal*, vol. xx., is not in everybody's hands. Powell's sketch shows the west window, then a nine-years-old example of Perpendicular as she was spoke or caricatured in the eighteenth century.

The view from the north-east before restoration is very taking. It brings into prominence the unusually drawn-up character of the pinnacles. From some points of view these must have looked ill, but from this one they compose admirably, and give the design of the church great piquancy and interest. Two more illustrations—the nave looking east, and the choir looking west—should serve to show the adherents of the "vista" heresy the error of their ways, even as they woefully show us Worcester folk what we have lost by the senseless banishment of the organ from its loft.

Our author gives twenty-one pages of "History of the Cathedral," which pages form a most useful prelude to his critical and descriptive survey. He begins this part of his work with a remark on the striking effect of the building as seen from a distance. On an autumn evening, from the high ground of St. John's—the Vigornian Ultra Pontem—it is an impressive and beautiful object, and it is thither, rather than anywhere to the eastward, that a visitor desiring a moderately distant view should be directed. Mr. Strange says that the near view from the precincts on the north side is not disappointing. I think it is very much so, owing chiefly to the amount of renovation which the whole exterior—except a small part of the north aisle walls at the west end—has necessarily undergone, and to the meanness of the slated roof. Nor will any one familiar with Salisbury agree with the statement that "perhaps Worcester is the most consistent in its general lines of all the ancient cathedrals."

Mr. Strange, in a methodical manner, starting from the extreme south-west angle, takes us round outside to the south-east corner, describes the tower, and then introduces us to the interior. He is rather too conscientious in the enumeration of features, such as staircase lights and gable crosses, which tell nothing of the past vicissitudes of the fabric, which no one can help observing for himself, and which, being neither very good nor very bad, call for no remark. In his recent paper on "West Fronts," Mr. Statham dismisses Worcester's as an "end totally devoid of greatness of effect. The Decorated window was substituted by Scott for a Perpendicular one, as a rebuke to the mediæval architects." This last is a very nice phrase, and well deserved in many cases, but not here, for the genuine Perpendicular window had, like pretty well every other external feature, gone the way of all "new red" nearly a hundred years before. A little bit of history concerning the opening of a way round the west end should be quoted from Green for the benefit of all *laudatores temporis acti*, and as a tribute to good Deans Martin and Waugh, *circa* 1750. Before this time, or the time of one of them, "passengers used to convey every kind of burthen through the north porch, across the nave, to the cloister door."

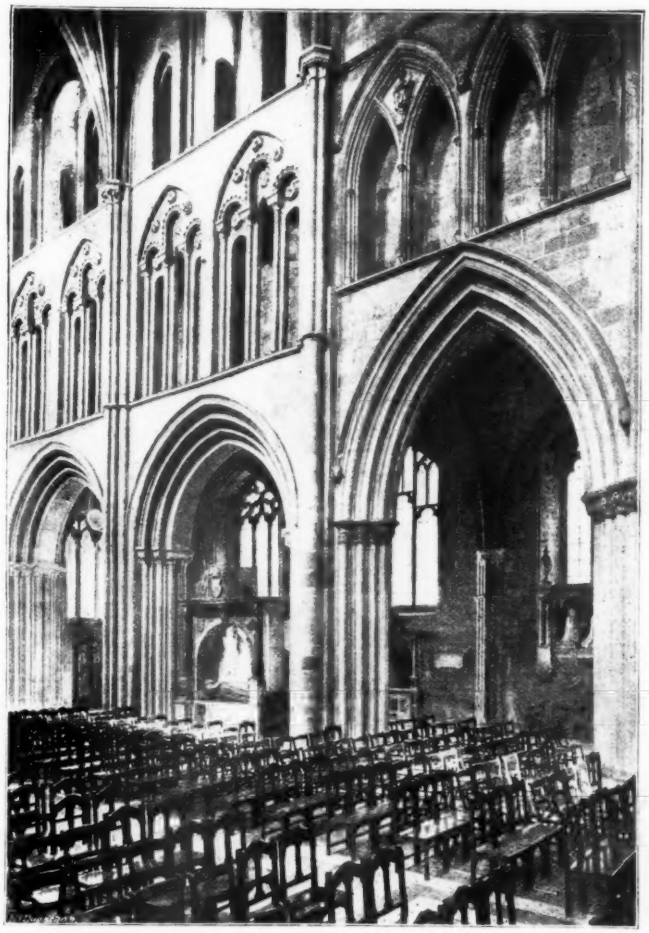
Attention should have been called to the two west bays on the north side, for there, and there alone (the jambs of the north doorway being excluded), externally, is any pre-restoration walling to be seen. The width of the north porch Mr. Strange gives as 8 feet, instead of 16 feet in the clear of the stone benches. His "two Perpendicular windows with flat ogee heads" have the usual elliptic heads of that style, with an ogival hood continued vertically to form a roll moulding. The north window of the great transept, he tells us, "is of ordinary character." Who would see in this description a very correctly designed, very geometrical, modern, over-sized window? The corbel table is oddly described as "a course of trefoil arcading on consoles."

By his opening remarks on the interior our cicerone reveals a leaning to the tenets of the "vista" sect, lovers of the *coup d'œil*, as though the interior of a church should affect one as does a *mise-en-scène* at Drury Lane. If the Rood-loft may not bear the Rood and the attendant figures, at least let it be substantial enough to carry the very moderate-sized organ which alone is wanted for accompanying the choir. If Mr. Strange does not remember how much more impressive was St. Paul's before the removal of the organ from the screen, at least he might study the two interior views mentioned above, and compare them with the corresponding views of the church as it is. If he still needs enlightenment, his musical friends will supply it, for, from their point of view, the screen is *the* place for the choir-accompanying organ. The objection about cutting the church in two has no force in a case like this of Worcester, where, the choir being seven steps higher than the nave, the separation is constructional and insurmountable.

The view, from a photograph, of the three western bays, well illustrates what Mr. Strange has to say about the very interesting two bays at the west end. He says "the arches are pointed, but (*sic*) rise from late Roman capitals." Why "but"? The pointed arches of Buildwas Abbey (1135–1160) are no enigma, while to these two bays Professor Willis assigns the later date of 1175 1200. Further on, Mr. Strange says that "the triforium stages have three-light windows."

This does not agree with the usual conception of a triforium.

Concerning the date of these two bays—the most interesting part of the nave—a difference of opinion comes to light between Professor Willis and Mr. E. S. Prior (in his *History of Gothic Art in England*), who gives their date as 1160. I incline to Willis's view. The Professor, aided by the lens of great knowledge of masonry, minutely examined the fabric, and he brings out the fact, which I think Mr. Strange misses, that in the piers on north and south, where the Norman and Decorated work meet, there is Norman masonry of two dates. The "two great Norman shafts" belong to the earlier church—Wolstan's—to which also belong the crypt, the nave aisle walls (except, of course, the outside), the core of the tower piers, the great transept walls, and the slype; but the pier mouldings which embrace these shafts are Decorated on the east and later Norman on the west side. What he means by "two grotesque consoles at the heads" of these shafts, I do not know. These two bays are vaulted in a kind of tufa, a material due to petrifaction, and resembling sponge, found and still occasionally used in the Stockton-on-Teme neighbourhood, some fifteen miles to the west of Worcester. The rock is excessively soft when quarried, but hardens in the air. The Normans were fond of it in these western counties—the church of Morcas, in Herefordshire, *e.g.*, being largely built of it—and, being somewhat of a rarity, Mr. Strange should have directed our attention to its employment for the filling-in of the vault.



Photochrom Co. Ltd., Photo. THE NAVE, THREE WESTERN BAYS.

Before leaving these two west bays, I cannot help saying that Mr. Strange's plan would have been more instructive had he distinguished by different hatchings the various dates of the work. A handbook such as this should be educational and judicial. It should teach Architecture, and it should, reviewing the deeds of Deans and Chapters, mete out praise and blame. Mr. Strange should therefore have extolled the quiet and dignified coursed stone vault westward of the choir screen, and he should have deplored the plastered soffit eastward of that line. Willis points out that the Lady Chapel was vaulted with rough lumps of tufa; but the vault thence, as far as the tower, "presents," he says, "a continuous surface"—beneath, of course: for above, the work throughout the Lady Chapel, choir, and eastern transepts seems to have been grouted; courses are not to be seen, except perhaps in one spot, and the backs of the ribs do not appear at all. Granting that the rubble work could not at the restoration have been left unplastered, one may well regret that the beauty of a vault—the joint lines of its courses aiding the perspective, and its surface mottled by the varying texture and colour of the stones—should have been re-obscured (for the

restorers scraped it clear of eighteenth-century whitewash) by a plaster surface covered with vermicular scrolls and filaments, with patterns and medallions.

The choir, we are told, "has a good effect." A local guide-book claims for the modern reredos the chief and almost exclusive interest of the choir, but really Mr. Strange's faint praise is not much less heinous. Professor Willis describes it as "a structure of singular beauty, extending to more than double the length of the original eastern building, and giving the church the distinction of an eastern transept equal in height to the central alley of the presbytery, and only found elsewhere in England in Canterbury, York, Lincoln, Sarum, Beverley, and Rochester, and on the Continent only at St. Benoît-sur-Loire and Cluny, the former doubtless the prototype of English examples." Mr. Strange says that the Lady Chapel and smaller transepts are contemporary with the choir, but in so saying he ignores the differences in the mouldings of the transverse vault ribs and of the main arcades. One pattern is used for the eastern part (the "Frons") up to and including the first arch west of the crossing, another thence up to the tower. Now the pier on which the western half of this arch rests has its base outside the wall of the crypt, and, as Willis further shows, there is to be seen in the spandrel a junction of masonry pointing to the eastern part having been first built. In 1222 a great storm, our author tells us, threw down the lesser towers. These, Willis suggests, flanked the apse. Probably, then, the Norman apse was partly destroyed, the presbytery and choir remaining, however, in a usable condition. In 1224, the monks and the bishop having effected a "compositio," there was set afoot the "novum opus frontis," *i.e.* the east end of a new and stately Lady Chapel, starting a long way out in the cemetery, and quite clear of the Norman work, carried westward and joined up to the Norman presbytery walls at the point indicated above. We may, then, suppose that pressure of fashion, or genuine appreciation of the graces and refinements of the new style, induced the bishop and monks to pull down the ruder work of their predecessors, and to continue the Early English work up to the tower, the junction being very plainly seen in the north wall, which still preserves some voussoirs of the pier and triforium arches of the Norman choir, with some stones of the string and of the clerestory window jamb, all *in situ*.

Mr. Strange does well to compare the Worcester choir with the coeval *chef d'œuvre* at Pershore, and he will earn the gratitude of any visitor who is induced by the reference to devote half a day to the visiting of that beautiful fragment. We may also thank him for calling our attention to the brass rings which in some places, but not in all (and the variation does not occur at random), cover the beds of the detached Purbeck shafts. Basing his remarks on Willis, he says these rings "were merely used to cover the unsightly joints of a method of fastening the lengths of shafting to the column by T-shaped cramps." I do not think this account is quite clear, nor quite what the expert professor meant. The cramps were, I gather, dowels with a tang, not T-shaped, but ⊢, the tang being driven into a bed of the main pier at the requisite height to suit each shaft, the several shafts of any particular cluster not being of uniform length. Owing to the unequal settlement of monolithic shafts and many-coursed piers, the beds of the former would be squeezed out, or their edges flushed. To hide this ragged appearance, then, did Bishop Giffard (1268–1301), when he "adorned the choir with marble columns," affix his rings of gilded brass. Further, it may be observed that in the four piers of the eastern crossing, *i.e.* exactly where there is less weight to be carried, the shafts are bedded on marble annulets.

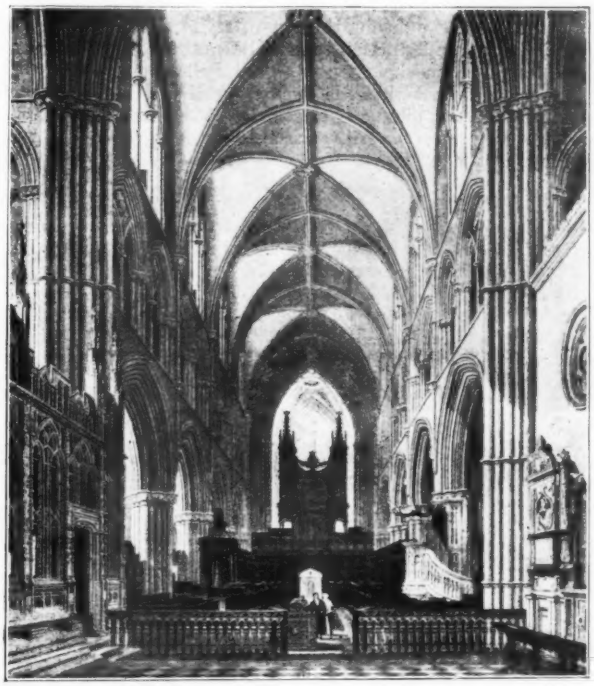
In connection with this part of the church Mr. Strange is sure of attention in what he tells us about the settlements that had reached an alarming pitch, "such as," says Willis, "to threaten the stability of the structure." The piers of the crossing were dangerously inclining inwards. This danger was met, in 1702–1712, by building a stone wall from pier to pier, "ornamented with gigantic quatrefoils." This wall Mr. Perkins, under whom in 1857 the great restoration works were begun, removed, and the failing piers he thoroughly repaired. But we are not told how. Inasmuch as the failing and bulging of the western piers must have been mainly due to the communicated thrust of the tower arches, the work of removing the props and repairing the piers must have been a very hazardous one, and its successful accomplishment proves that those who undertook it were no less skilful than bold.

Most people, observing from the old prints that the east end formerly had a large Perpendicular window, would ask what has become of it, and what justification there is for the present double-tiered arrangement of five lancets. The window seen in the prints replaced in 1792 a magnificent east window after the style of Gloucester east window, but much decayed. This late eighteenth-century effort had probably, like its predecessor, become ruinous. "The management, then, of the east end," as Willis observes, "was reduced to a choice between a modern conjectural restoration of the great traceried window and a modern conjectural restoration of the original Early English termination." Mr. Perkins, deciding for the latter, took as his model the group of lancet windows in the east wall of the smaller transept hard by. His decision was further justified by the existence at the east end of passages leading from the

triforium, and indicating that there was originally a gallery across the east wall, dividing it, as in the small transept. This Mr. Perkins reproduced. All the above information about the east end is given by Willis, and I think Mr. Strange should have embodied it in his book and spared us the enumeration of subjects of sculpture, new and old, and names of figures on the over-wrought modern pulpit.

Before leaving the choir the author gives a full description of the monuments therein and thereabouts; but why does he omit to censure the handful of modern canopies at the west end of the stalls on each side, awkwardly placed at an angle, and jostling one another in terror lest they should come too far forward and obstruct the vista? Why has he no words of severer stricture still for the swell-box of the organ, a quite recent masonry erection projecting nearly half across the choir aisle, awkwardly intersecting with the vault, and thinly disguised by gilt pipes?

Of the crypt—"a complex and beautiful temple," as Willis justly calls it—we ought to have had a plan, for it is rather a bewildering place on first entering it. Our guide must have experienced this, for he says the aisle has two rows of pillars, whereas it has but one. The centre of the crypt is occupied, not by an avenue, but by a row of pillars. This brings about at the centre of the apse "a unique and most picturesque combination" (Willis) of arches radiating from a central pillar, from which Willis derives the central pillar which is characteristic of English chapter-houses. Of this Mr. Strange says nothing; nor does he mention the circumscribing aisle, which, though now blocked, undoubtedly once existed—howbeit in some ill-directed diggings a few years ago nothing to establish the fact was found. These omissions are not trivial, because, in consequence, a visitor might be led to visit not at all, or only hastily, one of the four apsidal crypts in England, the undoubted work of St. Wolstan—work until *recently* absolutely unrestored or spoilt in any way. "Recently," because five years ago, to provide an air-chamber for the overgrown combination of the organs (on the Hope-Jones principle), two severies of the annexe or crypt under St. John's Chapel were built up with masonry from side to side and from floor to vault. This act not only robs this side crypt of more than half its length, but it makes the eastern bay inaccessible, although no use is made thereof. This eastern end of the crypt chapel has special interest as being the only post-Norman part of the crypt. In the thirteenth century, to provide, it is said, a burial place for the Earls of Gloucester, the Norman apse was replaced by a square end extending a few feet to the eastward. Surely, if only *pour décourager les autres*, Mr. Strange should have had some remarks to make on such a perpetration as this.



THE CHOIR, LOOKING WEST, BEFORE RESTORATION. (From Willis.)

We are told that the organ till recently used for regular choir services was built by Thomas Dallam (*sic*) in 1614. The author of *A Short Account of Organs, &c.*, mentions Robert Dallom, "cittizen [*sic*] and blacksmith" of London, as the most celebrated builder of his (pre-Commonwealth) time. He built the York Minster organ—that "most excellent-large-plump-lusty-full-speaking-Organ"—which, as Master John Mace, Lay-clerk of Trinity College, Cambridge, tells us, "came (as I may say) Thundering in, even so as it made the very Ground shake under us (oh! the unutterable, ravishing Soul's delight!)." At any rate, Dallam or Dallom, our late choir organ (or part of it) was one of the very few which "escaped even the extraordinary occasions of mischief to which that city was

subjected," as the aforesaid writer pertinently observes; and who shall say that the tale of "occasions of mischief" is complete even now?

Mr. Strange gives a list of the fifty-five stops and thirty couplers and accessories in the great and complicated machine, and then passes on to the bells, of which he gives a good and interesting account. But he might well have alluded to the story of the Dane who was fittingly lynched, having been caught in the act of trying to get away with the Sanctus bell. The author of a recent paper on the ancient church bells in this county says that there is enough truth in this story—is not a piece of the sacrilegious Dane's skin still to be seen on part of the old door preserved in the ante-room to the library?—to show that there were bells here in Saxon times.

The bells of the church seem to have been a thing but little accounted of here (still less at Sarum, where the ring in the campanile disappeared without a trace) by those responsible for their safe-keeping. Thus it is to be gathered from our author that there were three partly or wholly distinct *sets*—I do not say *rings*, for a reason which will presently appear—of bells before the present elaborate ring of twelve, with three half-tone bells added, and a bourdon-bell (which is not swung, unfortunately) of 90 cwt. It is not known generally, if at all, when the Clocherium was built. In 1175, "Turris nova Wigorn. corruit;" probably, then, to find a home for the bells, or to avoid the risk of a repetition of the disaster, the Clocherium was built. At the beginning of the sixteenth century, Prior Moore gives a list of four and a clock-bell. In 1139 the people of Gloucester, our rival now in the production of oratorio, resorted to a robuster method of competition, in the course of which they raided the sister city. Whereupon, says Florence, a contemporary monk quoted by our author, "we now, in alarm for the treasures of the Sanctuary, put on our albs, and, while the bells tolled, bore the relics of Oswald, our most gentle patron, out of the Church." Assuming that these bells were not destroyed in 1175, and that they received the addition of the "great bells cast by W. de Bradewe, the Sacristan," and consecrated by Bishop de Blois (1218–1236), they formed Moore's set of five. In 1737 there were eight. The inscriptions on these Mr. Strange gives us, and from them it seems more than probable that this ring included one, possibly four, of the earlier set. I think it likely that these ancient bells were not in scale, and that Moore's treble, second, third, and clock-bell may have formed the eighteenth-century second, third, sixth, and tenor. In 1868, "the second having been stolen during the restoration of the tower," seven remained; of them only two were clearly the same as in the 1737 list, while the tenor was inscribed "In honore S'ti Wolstani Epi." We may well wonder, with Mr. Strange, why, if this was a pre-Reformation bell, no earlier mention was made of it, and still more why it should have been allowed to pass into other hands, for this peal has been "expatriated." Lord Amherst has four, which, as was stated by the writer of the paper mentioned above, were the four old Cathedral bells of the thirteenth, fourteenth, and fifteenth centuries.

In his account of "the monastic buildings and precincts," Mr. Strange is rather tantalising. In the valuable quotation from Dr. Hopkins' (1675–1700) extracts from the archives we have, besides details of the "Belfrey" (it was 210 feet high), the names of the houses appropriated to ten of the officials. Mr. Strange might well have given us more information about these buildings. There is much available. There are three residences existing now on the sites of those assigned to the Tumbarius, the Sub-Prior, and the Eleemosynarius, and doubtless these contain considerable remains of the original houses; while as recently as 1841 five more of the residences of the old capitular body were surviving. The present Deanery, again, Mr. Strange credits with no more ancient remains than a fourteenth-century vault, but it has Early English work, and is worthy generally of more notice than it here receives. In the Norman passage out of the west walk of the cloister that led to the infirmary is the opening to the staircase up to the dormitory, and in the same walk the doorway through which the Sub-Prior passed to perform his senior-prefectorial duties. These Mr. Strange should have noticed, as also the double use of the slype, or passage, belonging to the earlier Norman period, leading out of the east walk. It was not only the place "for marchaunts to utter ther waires" (as we learn from *The Rites of Durham*), but also, through it, in case of a death in the house, "the dead corpes was caryed by the monnckes" to be buried in the "sentuarie garth." It further communicated with the Prior's house, and gave that dread personage a covered way into the cloister, church, and all the monastic offices. By a slip, Mr. Strange makes the entrance to the chapter-house from the west instead of from the east walk. In connection with this building, it is not easy, without reference to Willis, to see how, when "walls had become dangerous owing to the thrust of the vault," . . . satisfactory "results" could ensue from cutting them away. It also ought to be pointed out that not only the central pillar, but all the lower part of the work inside, is Norman. "The whole principle of the repair in *circa* 1400," says Willis, "consisted in remedying the defective mechanical construction of the Norman masons." This is a text on which the author of a "critical and descriptive survey" might usefully have preached a short sermon. It was not, says Willis, a case of "wanton desire to bring the old building into

harmony with the fashion of the time," and "nothing more was done than was absolutely necessary." There was no "occasion of mischief" then, whatever there may have been since.

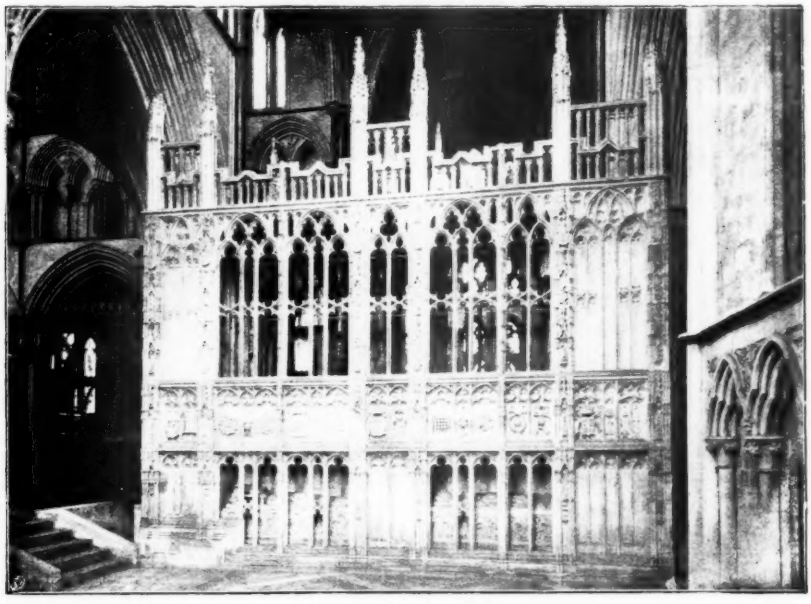
The Guesten Hall is a very thorny subject. Purchasers of the handbook who look at the pathetic photograph reproduced by Mr. Strange, or visitors who scan the remains themselves and the grand roof transferred to the clever modern church near the station at Shrub Hill, may well feel indignant at reading of the demolition of this fine hall, built in 1320 and destroyed in 1860; but it was, except at the cost of most expensive repairs, hopelessly ruinous, and this we can the more easily understand when we read in Willis that the principals of the flat pitched roof did not come opposite the buttresses.

When the remains of a great house, as was this, are under consideration, everything that helps one to realise the life of those who were its members is very valuable to all but the cursory visitor. For this reason Mr. Strange, it would seem, should have done more than merely mention *The Rites of Durham*, a record of 1593, giving, as Willis says, peculiar and unique information, not only as to monastic life in general, but as to that of a monastery in many ways closely resembling Worcester.

Perhaps, however, in what has been said too much notice has been taken of such shortcomings as must appertain to so small a volume as a handbook. It can readily be granted that this little book is a great advance on the ordinary guidebook; and if, in addition to giving its purchaser much information presented in a readable form, it inspires him with the desire of knowing more, who shall say that the writer has not done his work well?

One Parthian shot Mr. Strange, and most of his brother writers, must bear the brunt of. In describing a piece of modern work he, and they, give the materials, the subjects, the donor, the carver, but full seldom the name of the architect who designed it. Thus we have more than half a page about the most recent work of any importance in the church—the Jesus Chapel, with its screen and reredos; all sorts of detailed information is given us excepting the name of Mr. A. Briggs, the designer of this scholarly and intricate work.

Worcester. A. B. PINCKNEY, *M.A.Cantab.*



Photochrom Co. Ltd., Photo. PRINCE ARTHUR'S CHANTRY, WORCESTER.

MINUTES. XI.

At a Special General Meeting, held Monday, 15th April 1901, at 8 p.m., Mr. Edw. A. Gruning, *Vice-President*, in the Chair, with 57 Fellows (including 10 members of the Council) and 26 Associates (including 2 members of the Council), the Minutes of the Meeting held 1st April [p. 268] were taken as read and signed as correct.

The Hon. Secretary announced the decease of John William Blakey (Liverpool), *Associate*, elected 1893.

The following Fellows, attending for the first time since their election, were formally admitted and signed the register—viz. Butler Wilson, President of the Leeds and Yorkshire Architectural Society, and Robert Stephen Ayling.

The Chairman having moved, and the Hon. Secretary seconded, the adoption of a recommendation of the Council that Mr. Wm. Emerson, whose term as President would expire, under By-law 26, in June next, be requested to allow himself to be nominated as President for the ensuing year of office, and that consequently the aforesaid by-law be suspended, Mr. Lacy W. Ridge [*F.*], supported by Messrs. Henry Dawson [*F.*] and A. Frampton [*A.*], protested against the course proposed, and urged the President's retirement in accordance with the by-law. Whereupon, the motion having been put from the Chair for voting upon by Fellows only in accordance with Section 28 of the Charter, it was

> Resolved, by a majority of 24 (36 voting for and 12 against the motion), that Mr. Wm. Emerson, *President*, be requested to allow himself to be nominated as President for the ensuing year of office, and that consequently By-law 26 be suspended for one year.

Mr. Lacy W. Ridge having moved a general resolution that it was undesirable to suspend the operation of a by-law for the purpose of prolonging a President's tenure of office beyond the time fixed by the by-law, the Chairman ruled the motion out of order in default of the notice required by By-law 56. Mr. Ridge thereupon intimated his intention of bringing the resolution forward at the first available meeting.

The Chairman having moved, and the Hon. Secretary seconded, the adoption of alterations in the Institute Form of Contract made by the Council on the basis of the amendments resolved upon at the meeting of the 1st April, a further alteration was agreed to in Clause 12; and various objections as to other parts of the Form having been answered by the Chairman, it was

> Resolved, that the amendments in the Institute Form of Contract be adopted; that the Institute do sanction the issue of the revised Form as an Institute Paper; and that the old Form be withdrawn from circulation.

Mr. Wm. Woodward [*A.*], having referred to the proposed limited competition for the National Memorial to Queen Victoria, gave notice of his intention to requisition the Council to summon a Special General Meeting to consider a resolution urging that the Memorial be open to the competition of all British (including Colonial) architects, sculptors, and artists.

The Chairman having given notice of a Special General Meeting convened for the 22nd April to confirm the resolution for the suspension of By-law 26, the proceedings closed, and the Meeting separated at 9.30 p.m.

At a Special General Meeting held Monday, 22nd April 1901, at 8 p.m., Mr. Edw. A. Gruning, *Vice-President*, in the Chair, with 26 Fellows (including 10 members of the Council), 24 Associates (including 1 member of the Council), 3 Hon. Associates, and visitors, the Minutes of the Special General Meeting held Monday, 15th April [*see above*], were taken as read and signed as correct.

The Chairman announced that the Meeting had been convened by the Council, pursuant to Section 33 of the Charter, to submit for confirmation the Resolution suspending By-law 26 passed at the previous meeting, and the motion, having been put from the chair, was seconded by the Hon. Secretary; whereupon it was

> Resolved, *nem. con.*, that the Resolution of the Royal Institute suspending By-law 26 for one year, passed at the Special General Meeting of the 15th April 1901, be confirmed.

The Special General Meeting then terminated.

At the Eleventh General Meeting of the Session 1900–1901, held Monday, 22nd April 1901, at the conclusion of the Special General Meeting above minuted, Mr. Edw. A. Gruning, *Vice-President*, in the Chair, with Fellows, Associates, Hon. Associates, and visitors present, as enumerated above, the following members attending for the first time since their election were formally admitted, viz., Frederick de Jersey Clere, *Fellow*, *Hon. Secretary R.I.B.A. for New Zealand*, and Alexander Symon, *Associate*.

The Secretary announced the results of the April Statutory Examinations held by the Institute [p. 296].

A Paper by Mr. Francis Bond, M.A. [*H.A.*], on The Classification of Romanesque Architecture, having been read by the author, and illustrated by numerous photographic lantern-slides, a discussion ensued, and a vote of thanks was passed to Mr. Bond by acclamation.

The Chairman having announced that a Special General Meeting had been summoned by the Council for the following Monday, in compliance with the requisition of members, to consider various resolutions relating to the proposed National Memorial to Queen Victoria, the proceedings closed, and the Meeting separated at 10 p.m.